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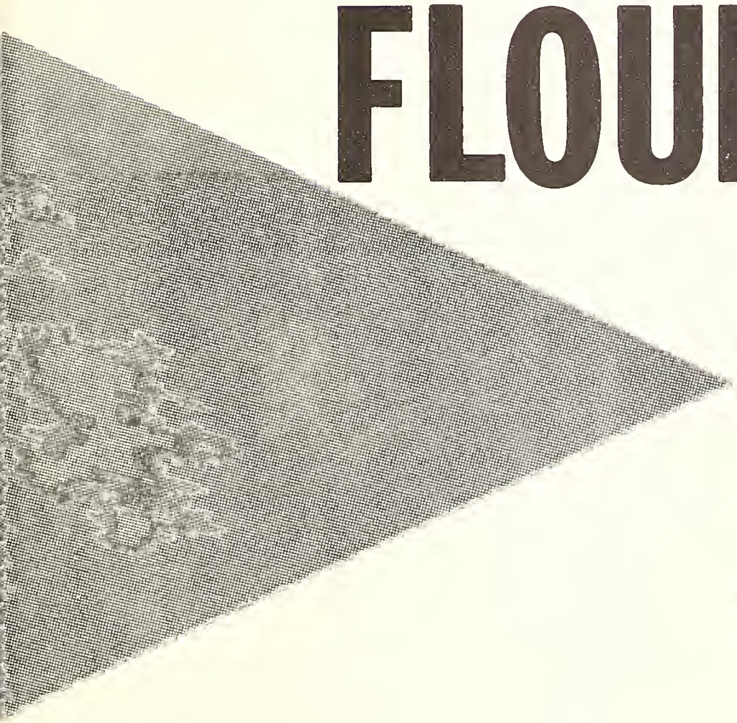
FACTORS INFLUENCING COMPETITION Among FLOUR MILLS in the Pacific Slope States



MARKETING RESEARCH REPORT
NO. 362

AGRICULTURAL MARKETING SERVICE
MARKETING RESEARCH DIVISION

UNITED STATES DEPARTMENT OF AGRICULTURE

PREFACE

This report is based upon analyses of data and information obtained from several independent sources. Primary data were obtained by the Babson Institute under contract with the United States Department of Agriculture through field interviews with flour millers and firms in related industries. Secondary data were obtained from a variety of sources including the United States Bureau of Census and Department of Agriculture, State Experiment Stations and trade publications. The complete analysis, which draws upon additional secondary data, represents a modification of the contract report prepared by the Babson Institute.

The study is a part of the Department's broad program which seeks to reduce the costs of marketing farm products and to increase returns to farmers through improvements in the industry.

The Department and the contractor are grateful for the cooperation of the milling industry in conducting the survey.

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SUMMARY

Flour mills in the Pacific Northwest have been producing a declining proportion of the flour produced in the Pacific Slope area and in the Nation. The pronounced national trends towards fewer and larger mills and the competition of national multiplant firms have played a part in this shift in flour production. The following factors--listed in approximate order of importance--appear to have been the principal local factors causing this decline:

1. Relatively large exports of white wheat were made from the Pacific Northwest in 1947-58 in contrast with both (1) exports from other supply areas in the Pacific Slope States, and (2) other types of wheat in the United States. These larger exports, which may be partially attributable to accumulations of stocks, have increased the costs of wheat to the millers in the Pacific Northwest. In many years, this caused wheat prices to millers in the Pacific Northwest to be higher than those to millers elsewhere. This is a reversal of the relationship shown by the announced support prices.

2. Price supports appear not to have fully reflected the trend towards the production of lower quality and higher yielding varieties of wheat in the Pacific Northwest than elsewhere.

3. Much greater increases in freight rates have occurred for wheat and flour moving from the Pacific Northwest to consumption markets than from other Pacific Slope States to these same markets.

4. There has been relatively smaller demand for flour byproducts in the Pacific Northwest market than in other Pacific Slope States, especially California.

5. Domestic disappearance of soft white wheat has decreased in the entire Nation. This is the principal type of wheat produced in the Pacific Northwest.

6. A relatively greater growth in population has taken place in California than in the Pacific Northwest. This has enabled California millers to expand their output more than millers in the Pacific Northwest.

Although the more important factors relate to the supply cost of local wheat, most of the flour produced within Pacific Northwest requires a blend of shipped-in higher protein wheat. The proportions of these blends in the various flours are trade secrets and could not be considered in this analysis. However, these supply cost factors (items 1 and 2 above) become less important as the maximum usable proportion of local or lower protein white wheat decreases. Specific information is not available but some informed individuals estimate that one-half or more of the flour produced for domestic consumption is principally milled from the harder, high protein wheats (including some of the high protein wheats grown in the area itself). The shift to continuous high speed baking lines undoubtedly has caused the maximum usable proportion of low protein wheat to decrease somewhat in recent years.

The results of this study have a bearing on both Government and commercial policies, but other considerations are involved. For example, this report deals entirely with the flour milling industry. The impact of the factors cited above on other industries such as the grain storage and handling industry, as well as on farm producers, also must be considered in policy decisions.

FACTORS INFLUENCING COMPETITION AMONG FLOUR MILLS IN THE PACIFIC SLOPE STATES

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INTRODUCTION

This study was designed to analyze the factors influencing the changing competitive relationship among flour mills in the Pacific Slope States. Manifestations of these changing relationships are noted in a more rapid closing of flour mills, a lower utilization of capacity, and a loss of markets for the Pacific Northwest mills (Oregon, Washington, and North Idaho) when they are contrasted with the intermountain (South Idaho and Utah) and California area millers. Information on other States in the western part of the country and on key terminal markets also is analyzed. Similarly, the analysis concentrates on the period 1946-56 because the major problems and changes became effective during this period, but attention has been given also to longer term developments.

The purpose of this analysis was to assess the relative influence of the various supply, demand, and internal company and plant factors which could have caused changes in the competitive relationships among flour mills in this area of the country. It was not the purpose of this analysis to make recommendations to the flour milling industry or to the Government agency involved concerning the means of counteracting these trends, or of evaluating their advantages and disadvantages. Thus, this analysis deals primarily with the measurement of change and the assessment of relative causation among the major influential factors.

Only one industry, flour milling, is analyzed. The impact of numerous factors on the grain storage, handling, and production industries must also be considered before policy decisions can be made.

Area Designations

The regional designations most frequently used are as follows:

1. Pacific Northwest -- Northern Idaho, Washington, and Oregon.
2. Intermountain States -- In the regional economic sense, this term includes the area bounded by the Rocky Mountains on the east and the Cascade-Sierra Nevada range on the west. For purposes of this study, however, the term includes only southern Idaho and Utah--the same area commonly indicated by the industry with this designation.
3. Pacific Slope -- Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington.

4. Western Region -- Washington, Oregon, California, Idaho, Nevada, Montana, Wyoming, Utah, Arizona, New Mexico, and Colorado. The terms Western Region and West are used interchangeably.

All table references to a given year relate to the calendar year unless specifically indicated as the crop year. All crop years begin as of July 1 of the year shown and extend through June 30 of the following calendar year.

Industry Background

At the turn of the century, the flour milling industry in the United States was composed of 10,000 establishments. The number of establishments fluctuated considerably from year to year, but declined to about 600 by 1958.

Accompanying this overall reduction in number of establishments was a marked trend toward larger scale plant operations. Even though per capita flour consumption has been falling gradually, the total amount of flour produced since 1900 has risen markedly because the rate of increase in population has exceeded the rate of reduction in per capita consumption. Most of this increase in flour production occurred before 1930; the increase has been small since that year. Comparing 1900 and 1956, the industry is producing a greater amount of flour but in fewer establishments.

Although accurate and current statistics on consolidation of establishments are not available, it is clear that the combination movement generally evident in the food industry has been under way in flour milling. The rise of new population centers, changing technology, economies of scale, utilization of byproducts, and the need for aggressive selling and marketing techniques are principal factors contributory to the growth of large-scale enterprises. In the flour milling industry the result has been the growth of a relatively few large firms with scattered milling facilities, as well as many smaller combinations which are more concentrated within regions. Numerous single-plant firms remain. The nature of a firm's organization is an important factor in its attitude toward changes in competitive relationships and its opinions about contributing factors. With mills in different locations and with effective development and sale of byproducts, the large-scale flour operation has managed to achieve relative stability of profits.

Relative Capacity Data

Flour milling in the five-State area (California, Utah, Idaho, Oregon, Washington) has followed the general trend towards fewer and larger mills. These changes were especially rapid in 1951-53 (table 1). The trend for the area as a whole in number of plants, total rated capacity, and average plant capacity is quite similar to the trend for the entire United States. It is only when the individual State data are considered that differences are noted. Changes in California apparently have been more rapid in recent years than in the United States as a whole, and have approximately compensated for the relative reduction in the rated capacity in the Pacific Northwest, especially in Washington.

Table 1.--Number of flour mills and daily rated capacity, specified States, 1951 and 1953

State	1951			1953			Percentage increase in average capacity per plant 1951 to 1953
	Number of mills	Daily rated capacity		Number of mills	Daily rated capacity		
		Total	Plant average		Total	Plant average	
	Number	100-pound sacks	100-pound sacks	Number	100-pound sacks	100-pound sacks	Percent
Washington......	19	47,650	2,508	14	44,360	3,188	+ 27
Oregon..........	20	28,030	1,402	12	28,050	2,338	+ 67
Idaho...........	25	10,464	419	15	8,495	566	+ 35
Utah............	25	13,930	558	17	16,180	952	+ 71
California......	14	18,390	1,313	9	18,860	2,096	+ 60
Area total....	103	118,464	1,150	67	115,945	1,730	+ 50
United States...	1,799	1,282,796	709	1,044	1,154,245	1,105	+ 56

Northwestern Millers Almanac, 1956.

Not only has the milling capacity in the Pacific Northwest decreased relative to the totals for the United States and the rest of the Pacific Slope area, but the proportion of capacity utilized in 1951 and 1953 also was relatively less (table 2). Both Oregon and Washington mills were operated at somewhat lower proportions of capacity than the United States average, and much lower than those in California and Idaho.

Relative Production

The long-time trend in flour production indicates relative stability of the area's production when compared with the total United States production (table 3). It also shows a tendency for flour production to increase in California and Idaho but remain relatively stable in Oregon and decrease in Washington. This tendency, however, becomes much more noticeable when each State's production is compared with the area's production (table 4).

California's flour production has increased from about 16 or 17 percent of the area's production to about 21 or 22 percent during the past 10 years. Utah's production also increased. Production in Oregon remained almost stable. Flour production in Washington decreased from 45 or 46 percent of the area's production to about 34 to 36 percent during the same period.

The same general trends are apparent from information contained in the 1947 and 1954 Census of Manufactures (table 5). Number of employees and value added by manufacture decreased in both Washington and Oregon when they were expressed in percentages of the area's total. Both of these items increased in California and Utah as a percentage of area total.

Table 2.--Estimated percentage of flour mill capacity utilized, specified States, 1951 and 1953

Area	1951	1953
	Percent	Percent
Washington	81	78
Oregon	81	77
Utah	85	111
California	106	123
United States	80	81

Estimates computed from rated capacity data as shown in table 1 and actual production from Facts for Industry, Flour Milling Products, U. S. Department of Commerce.

Table 3.--Percentage of the Nation's flour produced in specified States, selected periods

States	1926-29 1/	1938-42 1/	1948-52 1/	1952-55 2/
	Percent	Percent	Percent	Percent
Washington.....	4.42	4.83	4.14	4.19
Oregon.........	2.24	3.14	2.30	2.59
Idaho..........	0.62	0.51	3/	3/
Utah...........	1.18	1.18	1.74	2.10
California.....	1.78	2.06	2.07	2.47
Area total...	10.24	11.72	10.25	11.35

1/ Hollands, Harold F., Pacific Northwest Wheat, Oreg. Agr. Expt. Sta. Bul. 556, May 1956.
2/ Bureau of the Census.
3/ Not available.

Table 4.--Flour production in specified States as percentage of area production, 1945, 1948, and 1951-56

Year	Washington	Oregon	Utah	California	Total 4 States
	Percent	Percent	Percent	Percent	Percent
1945................	45	26	12	17	100
1948................	46	23	16	16	100
1951................	40	23	17	20	100
1952................	39	23	17	21	100
1953................	35	22	20	23	100
1954................	38	22	19	21	100
1955................	36	24	18	22	100
1956................	34	25	20	21	100

Bureau of the Census. Statistical Abstract of the United States, 1957. Idaho production available for only a part of the period.

Table 5.--Employees and value added in the flour and grain meal industry, specified States, as a percentage of the area total, 1947 and 1954

State	Employees		Value added	
	1947	1954	1947	1954
	Percent	Percent	Percent	Percent
Washington	38	35	39	35
Oregon	22	20	27	14
Idaho	8	9	7	5
Utah	12	14	10	19
California	20	22	17	27
Area total	100	100	100	100

Bureau of the Census. 1954 Census of Manufacturers.

Distribution of Wheat and Flour

Movement of wheat and flour in the Pacific Slope States, and between this area and the rest of the United States, is described to indicate the location of the market and also the trends in loss or gain in the different markets. This type of information becomes necessary in order to visualize the problem, and later to give relative importance to the various influencing factors.

Eastern Market

The declining importance of the Eastern market for both the wheat and the flour produced in the Pacific Northwest becomes readily apparent from a review of tables 6 and 7.

Nearly a fifth of the wheat shipped by rail in the United States originated in the 11 Western States. This total was approximately equally divided between the Pacific Slope States and the States of Montana, Wyoming, Colorado, and New Mexico. However, all except a small proportion of the rail shipments of wheat originating in the Pacific Slope States moved to points within the region.

These 11 Western States originated less than 11 percent of the flour shipped by rail in the United States. The Pacific Slope States accounted for three-fourths of these flour shipments. 1/

1/ Bredo, William, Shreve, Robert O., and Hamman, Charles L. Transportation Problems of Expanding Western Agriculture. U. S. Agr. Mktg. Serv., U. S. Dept. Agr., unnumbered, 227 pp., June 1954.

Table 6.--Rail shipments of wheat from the Pacific Northwest to other regions of the United States, crop years 1946-47 through 1952-53

Destination	1946-47	1947-48	1948-49	1949-50	1950-51	1951-52	1952-53
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
North Atlantic.....	6	12	16	4	8	2	1/
Southeast..........	538	81	14	1	0	0	1/
Midwest............	6,843	1,753	984	1,016	931	1,208	1/
Western States (excluding California).....	1,497	848	618	550	304	481	1/
California.........	2,683	1,895	977	747	735	724	1/
Other States.......	64	9	2	0	2	4	1/
Total............	11,631	4,598	2,689	2,318	1,980	2,419	1,703

1/ Not available.

Bredo, W., Shreve, R. O., and Hamman, C. L. Transportation Problems of Expanding Western Agriculture. U. S. Agr. Mktg. Serv. 227 pp., illus. 1954

Table 7.--Sales of flour for rail and water shipment from the Pacific Northwest to eastern and southeastern destinations 1945-56

Year	North of Ohio river		South of Ohio river	
	Sales	Percentage of 1945	Sales	Percentage of 1945
	100-lb. bags	Percent	100-lb. bags	Percent
1945...............	3,784,647	100.0	408,078	100.0
1946...............	2,554,379	67.5	419,049	102.6
1947...............	1,335,563	35.3	193,735	47.4
1948...............	449,013	13.2	86,954	21.3
1949...............	324,877	8.6	102,768	25.2
1950...............	241,000	6.4	95,460	23.4
1951...............	164,216	4.3	55,570	13.6
1952...............	220,200	5.8	69,986	17.1
1953...............	99,175	2.6	43,400	10.6
1954...............	147,332	3.9	41,400	10.1
1955...............	150,273	4.0	39,250	9.6
1956...............	119,593	3.2	25,215	6.2

Unpublished verified statement by Frank P. Aughnay, Secretary, Pacific Northwest Grain and Grain Products Association, Exhibit A. p 6. Ex Parte 206 Hearing, Interstate Commerce Commission, March 25, 1957.

California Market

California is a large market for the wheat and the flour produced in the nearby States. Table 8 indicates that between 7.2 and 9.9 million more bushels of wheat moved into the State by rail than was put on the railroads for possible shipment out of the State. Since not all local rail organizations move out of the State, California's net inshipment balance for wheat exceeds these differences.

Estimates summarized in table 9 indicate that between 10 and 33 percent of the California rail terminations of wheat originate within the State. The estimates also indicate that little of these wheat terminations originate in the Pacific Northwest. The major sources are Utah, Montana, and Idaho. There appears to be no major trend in the origins of these rail shipments of wheat.

Estimates of flour consumption and production in 1955 are compared in table 10 for the States of California, Oregon, Washington, and Utah. The latest three are surplus States in the production of wheat and flour. Apparently, about two-thirds of the flour produced in these three States must have been consumed elsewhere.

Both California production and rail terminations of flour have tended to increase since 1947 (table 11). Flour production, however, has tended to increase relatively more rapidly. An analysis of the origins of California rail terminations also indicates that the flour originating within the State has become an increasing proportion of the total during this period (table 12).

Table 8.--Wheat shipments by railroads in California, 1947-54

Year	Terminated in California	Originated in California	Difference
	Bushels	Bushels	Bushels
1947	13,199,900	4,103,833	9,096,067
1948	12,397,510	2,406,700	9,900,810
1949	12,656,000	2,938,100	9,717,900
1950	12,069,500	4,310,466	7,759,034
1951	14,279,100	4,681,500	9,597,600
1952	11,756,033	4,465,567	7,290,466
1953	12,270,366	3,472,700	8,797,666
1954	10,801,110	3,569,166	7,231,166

Compiled from annual reports of Railroads to California Public Utilities Commission.

Table 9.--Wheat: Percentage distribution of railroad shipments terminating in California, by State of origin, 1948-55

Year	Calif.	Utah	Montana	Idaho	Wash.	Oregon	All others	Total
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
1948.....	10.2	41.8	13.6	19.0	9.3	1.8	4.3	100.0
1949.....	20.1	39.4	17.5	13.3	3.8	2.4	3.5	100.0
1950.....	33.4	32.6	9.6	12.9	6.4	2.9	2.2	100.0
1951.....	31.3	39.6	12.5	11.1	4.3	-	1.2	100.0
1952.....	25.5	30.6	5.9	20.6	9.8	4.1	3.5	100.0
1953.....	18.4	47.0	13.4	20.2	1.0	-	0.0	100.0
1954.....	20.9	37.5	18.0	14.0	6.4	3.2	0.0	100.0
1955.....	21.5	27.6	15.6	10.6	9.5	6.8	8.4	100.0

Interstate Commerce Commission. 1 percent waybill analysis.

Table 10.--Comparison of annual production capacity and consumption of flour, selected State, 1955

State	Population July 1, 1955 1/	Estimated flour consumption 1955 2/	Annual flour production capacity 1955 3/	Annual deficit (-) or surplus (+)
	Thousands	Cwt.	Cwt.	Cwt.
Washington........	2,497	3,029,000	12,810,000	+9,781,000
Oregon...........	1,664	2,018,000	8,160,000	+6,142,000
Utah..............	776	941,000	5,904,000	+4,963,000
California........	12,696	15,400,000	5,862,000	-9,538,000

1/ Bureau of the Census.

2/ USDA estimated civilian consumption of flour per capita in 1955 was 121.3 pounds.

3/ Pacific Millers Association daily capacity of operation mills as of March 1956 times 300 working days.

Table 11.--Total railroad terminations and production of flour in California, 1947-54

Year	Terminations	Production	Difference
	Cwt.	Cwt.	Cwt.
1947	12,947,600	4,860,000	8,087,600
1948	12,836,080	4,000,000	8,836,080
1949	12,467,560	4,358,000	8,109,560
1950	11,868,300	4,600,000	7,268,300
1951	12,658,360	4,891,000	7,767,360
1952	13,476,820	5,257,000	8,219,820
1953	13,746,500	5,823,000	7,923,500
1954	13,252,100	5,370,000	7,882,100

Compiled from annual reports of Railroads to California Public Utilities Commission and Facts for Industry--Flouring Milling Products, Bureau of the Census.

Table 12.--Flour: Percentage distribution of railroad shipments terminating in California by State of origin, 1948-55

Year	Calif.	Wash.	Oregon	Utah	Idaho	Montana	All others	Total
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
1948	26	29	10	17	2	6	11	100
1949	23	36	18	10	1	4	8	100
1950	20	32	19	10	2	8	8	100
1951	20	24	13	14	5	3	21	100
1952	24	25	21	16	4	4	6	100
1953	33	19	14	20	4	5	5	100
1954	30	30	15	16	2	3	4	100
1955	33	25	17	16	4	1	4	100

Interstate Commerce Commission. 1 percent waybill analysis.

Washington, the leading State in the Pacific Northwest from which wheat flour moves into California, shows a decreasing relative importance. This is more apparent from a review of the estimated tonnage upon which table 12 is based than from the percentage data. The estimates of California's rail receipts of flour indicate that in 1948 about 223,000 tons originated in Washington. These tonnages decreased steadily to a level of 127,000 tons in 1953, moved upward in 1954 and then dropped again to a level of 145,000 tons in 1955. During this same period, the California market accounted for about 66 to 50 percent of the total flour originating in the State of Washington.

No trend becomes apparent from a review of either the relative percentages or the tonnage estimates for Oregon. Utah and Idaho appear to have improved their share of the California rail terminations of flour both in relative percentages and estimated tonnages.

An analysis based upon rail shipments could either overstate or understate the actual situation, depending upon the relative shifts in truck and barge movements. This is particularly true for the California market because of the influence of distance and the geographic pattern of the mountain ranges.

During the early years, when loading and unloading costs and water rates were lower, a sizable amount of wheat was shipped by water from Puget Sound and the Columbia River ports to California. But the all-rail and all-water rates have been made identical, and the all-rail rates blanket in many interior points beyond the ports. Consequently, this water traffic has become less significant.

An indication of the trend in truck movements is even more important. Reports were received during the flour milling interviews which indicate that both wheat and flour are moving into the California market by truck from as far as Montana. Interviews in the Intermountain States revealed a growing tendency to use trucks for both wheat and flour. Some companies reported that a number of their competitors shipped all or a large percentage of their flour production by truck, either company-owned or leased.

Quoting findings from a survey based upon wheat inspections: [2]

> "For all practical purposes, trucks and railroads moved all the wheat to California in the period 1941-52. Los Angeles and San Francisco received 80 to 90 percent of all inspected wheat receipts in California. Receipts in Los Angeles were almost entirely by railroad. Truck receipts were of considerable but fluctuating importance in San Francisco and other northern California markets. A trend of increasing truck movements has been in evidence in the postwar period. Truck volume has risen from less than 5 percent of rail volume in 1941 until it equaled one-third in 1952" (table 13).

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[2] See reference in footnote 1, p. 11.

Table 13.--Receipts of wheat at inspection points in California by type of carrier: Crop years 1951-52 and 1952-53 1/

Item	1951-52	1952-53
	Carlots 1/	Carlots 1/
Los Angeles:		
Rail	2,577	2,270
Truck	12	17
Barge	0	0
	2,589	2,287
San Francisco:		
Rail	1,142	1,070
Truck	532	996
Barge	81	80
	1,746	2,146
Petaluma:		
Rail	46	22
Truck	81	103
Barge	0	0
	127	125
Sacramento:		
Rail	452	77
Truck	21	31
Barge	0	0
	473	108
Stockton:		
Rail	345	78
Truck	42	172
Barge	0	0
	387	279
Total California:		
Rail	4,562	3,517
Truck	679	1,319
Barge	81	109
	5,321	4,945

1/ Carlot equivalents of 1,800 bushels of wheat.

Bredo, W., Shreve, R., and Hamman, C. L. Transportation Problems of Expanding Western Agriculture. U. S. Agr. Mktg. Serv. 227 pp., illus. 1954.

Most of this growth in volume of wheat and flour receipts by truck in California from outside the State appears to come from the Utah and southern Idaho area, especially when compared with receipts from the State of Washington. Distance and the location of mountain ranges are significant, but the field interviews also indicated much more interest in truck movement in the Intermountain States than in the Washington, Oregon, and northern Idaho area. This growth of truck receipts, therefore, appears to indicate that California rail receipts of Washington and northern Idaho wheat and flour particularly overemphasize the total importance of the area, and Utah and southern Idaho's receipts understate the area's importance in total shipments. The downward trend in Washington's flour receipts in California shown by the railroad receipts over the years also appears to understate the actual downward trend. On the other hand, the upward trend from the Utah area appears to understate the actual upward trend.

DEMAND

Demand is one of the three factors to be considered in this analysis for possible influence in changing the competitive situation among flour millers located in the West. Domestic demand and export demand are considered separately.

Domestic Markets

Changes in the size and utilization of flour milling capacity could have been influenced by changes in the domestic demand for wheat products. This demand, in turn, could have shifted because of changes in the size and distribution of the population, per capita consumption, urbanization, income level, and consumption patterns. Each of these will be discussed as possible indicators of changes in per capita consumption.

Population

For a century, the Pacific Slope States have had an unusually high rate of growth in population. California's increase in population has been particularly impressive (table 14). Population in the Pacific Slope States has increased by 87 percent since 1940.

In 1957 the population in the Pacific Slope States represented about 12.4 percent of the United States population as contrasted with 8.7 percent in 1940. This implies that flour millers located in the Pacific Slope States have an advantage in supplying 4 percent more of the United States consumption of flour because of shifts in relative population growth between 1940 and 1957. This becomes even more important since the United States population increased about 22 percent during the period.

Table 14.--Population of the Pacific Slope States, selected years

State	1940	1950	1957 1/	Increase 1957 over 1940	
				Number	Percent
Washington	1,736,181	2,378,963	2,722,000	985,809	57
Oregon	1,089,684	1,521,341	1,769,000	679,316	62
Idaho	524,873	588,637	640,000	115,127	22
Utah	550,310	688,862	851,000	300,690	55
California	6,907,387	10,586,223	13,922,000	7,014,613	102
Arizona	499,261	749,587	1,136,000	636,739	128
Nevada	110,247	160,083	267,000	156,753	161
United States ..	131,669,275	150,697,361	171,229,000	39,559,725	30

1/ Estimated as of July 1. Armed forces overseas included in U. S. total but not in States.

Bureau of the Census. U. S. Census of Population: 1950 and Current Population Reports.

Population growth, however, was not spread evenly in the Pacific Slope States. Flour millers in the Pacific Northwest were not as well favored as California millers, since California not only had the largest population at the start of the period but also had the most rapid increase during the period (table 14).

The importance of the California market has magnified considerably during the period. California now accounts for about 65 percent of the population in the Pacific Slope States. Apparently this market will continue to grow in importance, since population estimates indicate that it may represent 68 percent by 1975.

Per Capita Consumption

Population alone does not explain the growth in the flour market. If it did, many of the problems of the flour industry would be overcome by the growth of the market. Per capita consumption of flour has been decreasing steadily for some time. The United States per capita consumption of flour was 171 pounds in 1930, 155 pounds in 1940, and 135 pounds in 1950.

This decline in United States per capita consumption of flour results from changes in several factors. Approximately 12 percent of the decline between 1942 and 1955 resulted from the relatively large shift in the population from farm to rural nonfarm and a slight increase in the urban category. 3/ In the Western region, a highly heterogeneous area, the average consumption of flour per person was 2.6 pounds during the survey week. The average person who lived in an urban area consumed 2.43 pounds; in a rural area, 2.93 pounds; and on a farm, 3.06 pounds. A rise in urbanization tends to amplify the effect of income levels on the purchase of grain products; urban incomes average higher than rural; and families with the higher incomes usually buy less grain products.

Another 40 to 45 percent of the total decline resulted from shifts to higher income levels. Generally, the greater the income, the less grain products are consumed, regardless of the degree of urbanization (table 15). Family income also influenced consumption in that a higher income caused a greater proportion of the households to use certain specialty grain products such as bakery products, ready-to-eat breakfast cereals, and flour mixes. Lower incomes caused a greater proportion of the households to use flour, breakfast cereals, rice, cornmeal, and paste products (table 16).

The remaining 40 to 45 percent of the total decline could result from changes in the pattern of consumption with respect to a given income and in the level of consumption at all income levels. Since patterns of consumption changed very little during the period, almost all of this decline was caused by reduced levels of consumption at all income and urbanization levels. Thus changes in levels of use by farm households account for about 7 percent, rural nonfarm households 10 percent, and urban households the remaining part of this 40 to 45 percent.

Table 15.--Per capita consumption of grain products, by degree of urbanization and income, 1 week, spring of 1955

Household income level	Urban	Rural	Farm
	Pounds	Pounds	Pounds
Under $2,000	2.23	3.43	3.19
$2,000 to $2,999	2.75	2.90	3.15
$3,000 to $3,999	2.74		
$4,000 to $4,999	2.45	2.98	3.07
$5,000 to $5,999	2.29		
$6,000 to $8,000	2.52	2.68	2.62

U. S. Agricultural Marketing Service. The Household Market for Grain Products. National Food Situation, July 1958.

3/ Lavell, Robert J. The Household Market for Grain Products. National Food Situation. U. S. Dept. Agr. July 1958. This article was based upon the results of the 1955 Household Food Consumption Survey.

Table 16.--Flour products used at home by urban and rural-farm families in the West, 1 week, April-June 1955 1/

Flour product	Percentage of households using flour products		Quantity per household		Money value per household	
	Urban	Rural-farm	Urban	Rural-farm	Urban	Rural-farm
	Percent	Percent	Pounds	Pounds	Dollars	Dollars
Flour other than mixes 2/	76.5	92.7	1.59	4.77	0.16	0.44
Prepared flour mixes	52.2	54.0	.76	1.21	.19	.26
Wheat breakfast cereals 3/ (excluding baby cereals)	37.5	35.3	.21	.26	.07	.08
Bread 4/ (white, whole wheat, and other)	95.0	90.7	4.66	5.73	.92	1.09
Baked goods other than bread 4/	83.4	82.7	1.97	1.70	.81	.62

1/ Bureau of the Census definitions of urban and rural-farm were used. The West includes Washington, Oregon, California, Nevada, Idaho, Utah, Arizona, Montana, Wyoming, Colorado, and New Mexico.

2/ Includes white and other.

3/ Ready-to-eat only.

4/ Commercial bakery products.

U. S. Agricultural Research Service and Agricultural Marketing Service. Food Consumption of Households in the West. Household Food Consumption Survey, Report No. 5, 194 pp. 1956.

Income Levels

Wage rates and per capita incomes in the Pacific Slope States have exceeded those for the United States as a whole. By 1952, the region's share of the national income had risen to 13.3 percent. At the same time its proportion of the national population was 11.4 percent. A projection of income trends by the Stanford Research Institute indicates that the region's share of the national income may rise to 14.2 percent by 1975.

Percentage increases in total and per capita incomes in the Pacific Slope States, especially California, also have been greater than those in the entire Nation during the period since 1929 (table 17). Since 1950 the percentage increases have slowed down to about the average rate for the Nation as a whole.

Table 17.--Increase in total and per capita income, selected States and periods, 1929-56

State	Increase in total personal income		Increase in per capita personal income	
	1929 to 1956	1950 to 1956	1929 to 1956	1950 to 1956
	Percent	Percent	Percent	Percent
Washington	362	35	170	21
Oregon	407	34	179	19
Idaho	341	31	216	24
Utah	367	49	192	27
California	491	66	143	31
Five-State average	394	43	180	24
United States	279	44	176	30

U. S. Department of Commerce. Survey of Current Business, August 1957.

Urbanization Levels

Approximately 59 percent of the population of the United States is urban, and 41 percent rural and rural nonfarm. In the Western region, about 75 percent of the population is urban and 25 percent rural.

In the country as a whole, 69 percent of the food and marketing services are consumed by the urban population. If the Western region assumes the same consumption behavior, its urban families consume about 86 percent of the food and marketing services sold.

Trends in White Wheat Consumption

Total flour production, excluding the war years, has remained relatively stable since 1930. This indicates that increases in population and exports have about compensated for decreases in the per capita consumption of flour. However, the domestic disappearance of white wheat has decreased relatively more than that of any other type of wheat since World War I (table 18).

This relative decrease in domestic disappearance of white wheat, combined with the declining importance of the Eastern market for Pacific Northwest flour, indicates a probable net decrease in the domestic demand for Pacific

Table 18.--Domestic disappearance of wheat, by types, averages 1930-34 and 1935-39, annual 1947-56

Year	White	Hard red winter	Soft red winter	Hard red spring
	Million bushels	Million bushels	Million bushels	Million bushels
1930-34	59	---	---	---
1935-39	79	---	---	---
1947	94	324	157	154
1948	99	239	169	137
1949	78	276	155	141
1950	75	298	135	150
1951	82	248	135	189
1952	82	241	131	175
1953	66	261	143	145
1954	65	248	143	144
1955	57	238	137	152
1956	52	235	134	141

Northwest flour during the 1947-56 period. It appears doubtful that the relative increase of 4 percent in population in the Pacific Slope States could have offset the influence of these factors.

Nearly all of the commercial bagged flours are produced from blends of the better locally produced white wheats and wheat of different hardness or protein content produced in other areas. These flour formulas are retained as trade secrets so interviewers were unable to obtain the specific data needed to estimate the proportions of different wheats used in the blends. The value of the various wheats for the different types of flours are discussed more completely in the section entitled "Supplies of Wheat." However, it is well to recognize that those factors which influence the supply cost of wheat relate primarily to that proportion of the wheat which can reasonably be expected to be supplied by the locally produced wheats.

Export Markets

Exports of wheat and flour may influence flour millers located in the Pacific Northwest in three ways. First, exports of wheat, if large enough to increase the total demand for the wheat produced locally, may increase the cost of wheat to millers. Second, to the extent that Montana wheat is used, transit privileges, accumulated on flour exports, may be used in moving flour to domestic markets. Third, flour exports constitute an element of demand for the flour millers.

Total Exports

Exports of wheat and flour are more important to the Pacific Northwest than in other areas of the United States (table 19). In recent years, the importance of the export market to the Pacific Northwest has grown rapidly relative to its importance in the remainder of the country. Exports from the Pacific Northwest during recent years have fluctuated more than they have in the remainder of the country. The reverse was true prior to 1946. 4/

The magnitude and increasing variability of total exports of wheat and flour from the Pacific Northwest seem to indicate that the export factor is significant in the changing competitive situation facing Pacific Northwest millers. This is especially true with respect to the impact of exports on the cost of wheat to the millers. Flour has represented a continually decreasing share of these total exports.

Table 19.--Export volumes and proportion of total wheat production exported, Pacific Northwest and remainder of United States, selected years 1/

Year	Pacific Northwest		Remainder of United States	
	Quantity exported	Exports as a percentage of production	Quantity exported	Exports as a percentage of production
	Million bushels	Percent	Million bushels	Percent
1900-37	27	37	125	17
1919-37	32	45	109	14
1938-56	58	57	205	21
1947	50	51	429	34
1948	74	64	428	36
1949	68	72	231	23
1950	84	82	281	31
1951	126	109	349	40
1952	90	72	226	19
1953	66	50	151	14
1954	56	51	218	25
1955 2/	75	85	267	32
1956 2/	204	215	331	37

1/ U. S. Department of Commerce. Exports of Flour Converted to Grain Equivalent.

2/ Does not include relief exports which totaled 4 million bushels in 1955 and 14 million bushels in 1956.

4/ Between 1900 and 1956, total annual exports from the United States averaged 189,500,000 bushels with a standard deviation of 134,818,000 bushels. The average in the Pacific Northwest was 10,935,000 bushels; the standard deviation 4,902,000 bushels.

Since this analysis was designed primarily to study the impact of the various factors rather than, for example, the cause of the increase in volume and fluctuation of exports, the various export programs have not been analyzed. Table 20 summarizes the wheat exports from the United States under each of the various export programs for the period 1948-57.

Flour Exports

Not all flour mills located in the Pacific Slope States export flour, although the field survey indicated that nearly all millers located in the Pacific Northwest do so. However, some of them were primarily producing for the export market while others produced as little as 5 percent of their flour for the export market. Flour millers located in the California, Utah, and southern Idaho area usually produced little flour for export. This significant difference in the demand facing flour millers in these two areas, therefore, undoubtedly explains some of the difference in the economic conditions facing the flour milling industry in these two areas.

The flour milling industry may not only obtain direct increases in profits from the sale of flour in the export market, but also the added volume can provide the mill run necessary to reduce per unit costs on its entire volume. It may also be the deciding factor in a decision to buy more efficient machinery and equipment or to expand a plant.

The flour milling industry in the United States recognizes the importance of the export flour market, even though on the national level only 1 out of 7 to 10 bags of flour produced is exported. 5/ Obviously this flour export must be even more important to the Pacific Northwest millers, since they have exported one of every three or four bags of flour produced. Table 21 shows how, in the Pacific Northwest, exports of flour have been decreasing in proportion to total exports, but have remained at a relatively stable proportion of flour milled during 1949-56.

Since 1949, exports of flour, therefore, have been a relatively stable and important factor in assisting the flour millers in the Pacific Northwest to operate successfully. Any factors which would reduce either the relative stability or the volume of flour exports from the Pacific Northwest undoubtedly must be considered as having a bearing on the competitive conditions facing flour mills located in this area. The decrease from exports that ranged from 39 to 45 percent of the total production in 1947 and 1948 to 29 percent in 1949 in the Pacific Northwest, the largest decrease in recent years, must therefore have resulted in numerous problems. However, an even greater decrease occurred in the United States as a whole (table 21).

Not all mills have been assisted equally by the magnitude and recent stability of these flour exports. Obviously mills which are primarily operating for the export market have benefited the most. At the other extreme, mills which export only a small proportion of their production gain the least from this factor.

5/ The Northwestern Miller. The All-Important Seventh Sack of Flour (editorial), September 9, 1958.

Table 20.--Wheat, including flour (grain equivalent): Total, and Government exports by programs, United States, years beginning July 1, 1948-57

Kind of exports	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957 1/
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Under Government programs:										
P.L. 480 2/										
Title I	---	---	---	---	---	---	23,802	94,300	200,500	176,100
Title II	---	---	---	---	---	---	15,991	11,900	12,200	14,300
Barter 3/	---	---	2,619	16,924	3,938	9,964	46,458	66,700	86,900	9,700
Donations (Sec. 416) 4/	---	---	---	---	---	---	---	2,788	11,735	17,932
Marshall Plan 5/	208,503	137,945	138,856	137,163	22,965	89,063	70,811	65,000	63,600	31,200
Army Civilian Supply 6/	167,508	118,845	31,493	5,254	2,702	1,517	963	---	---	---
Total	376,011	256,790	172,968	159,341	29,605	100,544	158,025	240,700	375,000	249,200
For dollars	126,548	41,680	192,605	315,374	287,585	115,968	115,609	104,900	173,600	152,000
Total exports	502,559	298,470	365,573	474,715	317,190	216,512	273,634	345,600	548,600	401,200
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Under Government programs	74.8	86.0	47.3	33.6	9.3	46.4	57.7	69.6	68.4	62.1
For dollars	25.2	14.0	52.7	66.4	90.7	53.6	42.3	30.4	31.6	37.9

1/ Preliminary.

2/ Public Law 480, 83rd Congress, as amended.

3/ Includes all exports of wheat and flour under the following authorities: P.L. 806, 80th Congress, CCC Charter Act; P.L. 85, 81st Congress, CCC Charter Act, amended; P.L. 439, 81st Congress, Agricultural Act of 1949; P.L. 480, 83rd Congress, Agricultural Adjustment Act of 1954; P.L. 690, 83rd Congress, Agricultural Act of 1954 and P.L. 540, 84th Congress, Agricultural Act of 1956.

4/ Includes shipments by U.S. charity and relief agencies as authorized under Title III of P.L. 480.

5/ P.L. 472 (4/3/48), Foreign Assistance Act of 1948. Original Act Establishing Economic Cooperation Administration (now known as International Cooperation Administration). Includes, in part, exports under Greek-Turkish Aid, China Aid, Yugoslav, India and Pakistan Relief programs. In most years data represent procurement authorizations, and are not strictly comparable in time to actual exports of wheat and wheat flour.

6/ Shipments for civilian feeding in occupied areas.

Grain and Feed Division, Foreign Agricultural Service.

Table 21.--Flour exports related to exports of wheat and flour and production of flour, Pacific Northwest and the remainder of the United States, selected years

Year	Flour exports from Pacific Northwest	Proportion of total wheat and flour exports shipped as flour		Proportion of flour production exported	
		Pacific Northwest	Remainder of United States	Pacific Northwest	Remainder of United States
	1,000 bushels	Percent	Percent	Percent	Percent
1900-37	11,149	48	44	---	---
1919-37	11,761	45	39	---	---
1938-56	10,509	39	32	---	---
1947	15,539	31	36	39	25
1948	17,194	23	26	45	18
1949	7,291	11	14	24	6
1950	9,351	11	12	27	6
1951	8,161	6	10	24	9
1952	8,549	9	14	25	6
1953	7,794	12	17	24	5
1954	10,226	18	17	28	7
1955	10,261	14	15	24	7
1956	11,719	6	15	28	9

Mill Byproducts

Data concerning mill byproducts indicate that (1) the California market has not been the major market for the mill byproducts produced in the Pacific Northwest, (2) millers located in the Pacific Northwest apparently receive from $5 to $7 less per ton for their byproducts than do the millers located in California, and (3) this differential has increased somewhat since 1953.

The predominance of local market outlets for flour mill feed byproducts is indicated in table 22. Though table 22 covers rail terminations only and the commodities included are much more inclusive than flour mill byproducts, they are primarily feed commodities, the exclusion of truck movements can do no more than understate the proportion of the California market supplied locally and overstate considerably the importance of the California market for distant origins. Much of the volume of these flour mill byproduct feeds moves by truck.

Even when only rail movements are considered, between 0 and 11 percent of the supplies on the California market originated in the State of Washington. Oregon and Idaho originations were no larger, and fluctuated in a similar manner.

Table 22.--Mill byproduct 1/: Percentage of rail terminations in California originating in California, Washington, and other States, 1948-54 2/

Year	California	Washington	All others
	Percent	Percent	Percent
1948	50	10	40
1949	39	11	50
1950	39	1	60
1951	53	0	47
1952	35	4	61
1953	33	2	65
1954	31	6	63

1/ Classified by the Association of American Railroads, Freight Commodity Statistics Classification, 1954 Edition, as including the following: Barley, various forms; Bran, noibn; Brewers' flakes; Corn, cracked; Gluten feed; Gluten meal; Grain dust; Grits, various forms; Groats, grain; Hominy (not canned or flaked); Hulls, grain; Middlings; Oat clippings; Oats, pulverized; Rice, various forms; Screenings, grain, noibn; Shorts; Soya bran meal; Wheat, cracked, noibn; Wheat.

2/ Based on a representative 1 percent sample of terminations.

Irrespective of whether these byproducts were sold in the local market or in the California market, it appears that flour millers located in California and Utah received about $5 to $7 more per ton for these byproducts than did the flour millers located in the Pacific Northwest (fig. 1). It also appears that since 1953 this differential has increased still further. With the byproduct yield representing approximately 27 percent of the wheat ground, this differential is quite important in a flour miller's profit and loss statement.

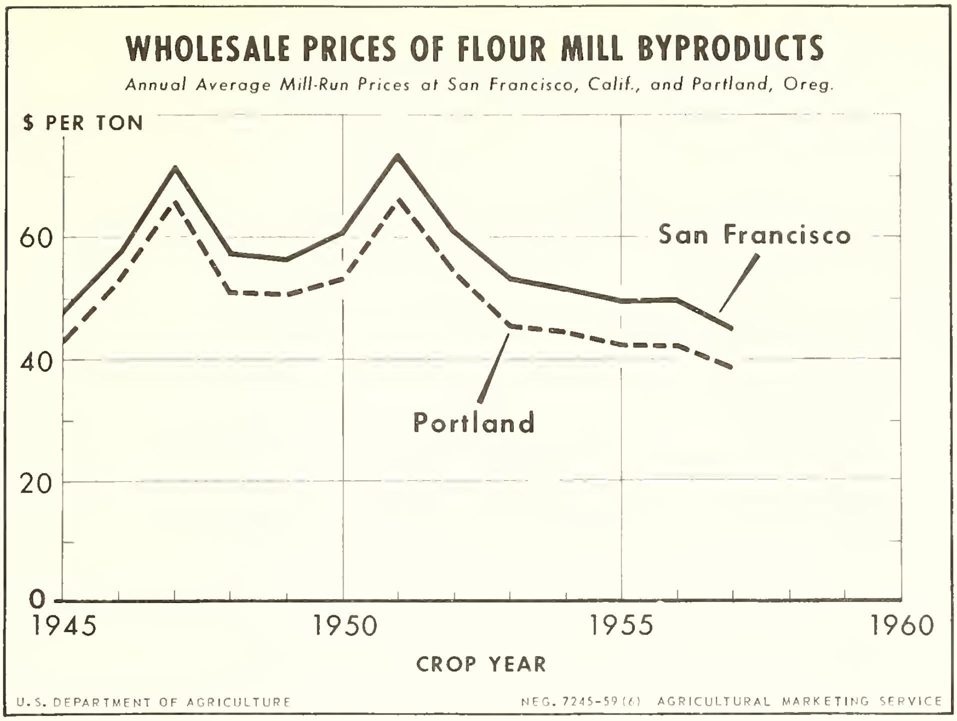

Figure 1

INTERNAL COMPANY AND PLANT OPERATION

Company Organization

Single- or multiple-plant companies with all mills located in the Pacific Northwest appear to be much more concerned with the changing competitive relationship than are single-plant companies located in other States and multiplant companies with mills located in a number of regions. Mills located in California and the Intermountain States were not faced with as important a shift in competitive conditions. Likewise, companies with mills distributed over wide areas could organize their supply sources, production, and distribution patterns to overcome all or some of the problems facing the Pacific Northwest, or were able to absorb its effect in the interest of long-run company plans.

Second, the larger mills, especially those operated by the larger companies with numerous mills, have been able to operate closer to capacity than the small firm with a relatively small mill. Apparently, the larger mills and the larger companies have been able to retain their markets in the face of changing competitive conditions better than the smaller mills. A year in which capacity utilization amounts to 95 percent is considered a very good year. 6/ The disparity between capacity utilization of large and small

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6/ Based upon data contained in the Northwestern Miller.

mills can be noted from the 1953 information. During this year, the industry operated at 81.2 percent of capacity. But mills producing 8,001 sacks or more per day operated at 98.6 percent of capacity, while the small mills producing 50 to 400 sacks operated at 24.4 percent of capacity. [7]

Third, interviews appeared to indicate some relationships to the development of the byproduct market. The predominant opinion expressed during the field interviews indicates that the sale of byproducts through one's own formula feed establishment provided the best and most stable market. However, some of the companies indicated that they believed that only the large milling companies can develop and hold the brand name preference required in the formula feed market.

Fourth, within the Pacific Northwest the companies with plants at inland locations (irrespective of company organization) felt the changing competitive situation more keenly than did those located at ports or accessible river locations.

The preceding observations were based upon such information as the relationship between the companies' organization and (1) their concern with the problem of the changing competitive conditions, and (2) the degree of emphasis placed upon the various factors they believe to be causing these changes in competitive conditions. Interviews with company and plant managements resulted in little factual information concerning the impact of company organization on the economic well-being of the company.

Flour Extraction Rates

The milling industry recognizes the influence of the flour extraction rate on milling efficiency. This is especially true with reference to economies of scale because mills producing only 100 sacks per day require 10 pounds more wheat per sack than do the large commercial mills. [7] The operators of a very small mill require 145 pounds of wheat to produce 100 pounds of flour, while large mills require only 135 pounds.

While flour extraction rates differ among mills of different sizes, they do not appear to differ among States in the problem area (table 23). Thus, it appears that this factor is not important in determining the location of mills or the proportion of capacity utilized in the West, since both large and small mills appear to be distributed similarly among the States.

Operating Costs

Analysis of operating costs would disclose whether or not the cost of plant operations in one plant or area, as opposed to another, could be

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[7] Northwestern Millers Almanac, 1956.

Table 23.--Annual flour extraction rates, selected States, 1948-57

State	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Washington	73.9	73.4	73.5	73.5	74.2	73.9	1/	73.6	73.6	73.2
Oregon ...	73.7	73.4	72.8	73.3	73.2	73.1	1/	72.8	73.5	74.2
Utah	73.8	72.9	72.5	73.0	72.0	74.3	1/	72.4	72.6	73.4
California	74.1	73.7	73.5	73.1	72.6	73.4	1/	73.7	73.8	73.6
Region ...	73.9	73.4	73.2	73.3	73.2	73.7	1/	73.2	73.4	73.6
U. S. ..	72.8	71.9	71.6	71.4	71.4	71.8	71.8	71.9	72.6	72.6

1/ Not available.

responsible or partially responsible for any shifts in competitive relationships. Higher per unit operating costs in one plant or area as compared to another could result from, for example: 8/

1. Growing obsolescence of plants, equipment, and material-handling systems in one area as compared to another,
2. Relative decreases in sales volumes without proportionate decreases in selling and administrative costs, and
3. Less efficient labor per hourly wage rate paid.

The millers interviewed indicate that the mills located in the five-State area replace equipment as needed, that investment for expansion has been lacking in the Pacific Northwest because of idle capacity, and that investment in excess of replacement needs has occurred in California and to some extent in the Intermountain area.

An examination of the hourly wage rates paid as reported in the 1954 Census of Manufactures indicates that wage rate differences have little influence even when labor costs are interpreted as physical inputs. The 1954 census indicates that hourly wage rates were $2.10 in California and the same in Washington (in the Pacific Northwest). In Utah and Oregon (in the Pacific Northwest) they were $1.90. In Idaho, (the northern part of the State is in the Pacific Northwest) the hourly wage rate was about $1.50.

8/ Stated or published operation costs also differ because of differences in accounting procedures among companies.

A further analysis of cost data in the Census of Manuufactures indicates no significant difference among States in the value of shipments per dollar paid to labor. This conclusion is based upon the broad categories of value of shipments, value added, and labor costs as shown in table 24. Both total labor costs and production labor costs are becoming a larger proportion of the value added in California and Utah, while the reverse is true for mills located in Oregon and Idaho (table 24).

Information about operating costs of individual plants obtained during the field interviews was later supplemented by available industry reports. If the industry average operating cost of producing flour in the United States of 46 cents per hundredweight is used as the average cost, an analysis of these data for the years 1950, 1952, 1953, and 1954 discloses:

Table 24.--Value of shipments in 1954 and value added in the flour and grain meal industry in 1947 and 1954 per dollar paid for total and production labor

State	1954 Value of shipments per dollar paid to 1/--		Value added per dollar paid to--			
	Total labor	Production labor	Total labor		Production labor	
			1947	1954	1947	1954
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Washington	14.86	19.56	2.76	2.83	3.74	3.75
Oregon	15.66	22.96	3.67	2.10	4.97	3.08
Idaho	10.31	12.34	3.03	1.82	4.07	2.18
Utah	16.81	23.02	2.66	3.86	4.08	5.29
California	14.24	20.68	2.43	3.18	3.26	4.61
U. S. average	15.51	22.22	3.44	4.91	3.43	3.76

1/ Not available by States for 1947.

Bureau of the Census. 1947 and 1954 Census of Manufactures.

Pacific Northwest.--Four of the seven mills for which data were available tended to have costs above the industry average and three below the industry average.

Intermountain.--Four of the seven mills for which data were available tended to have costs above the industry average, two below, and one equivalent to the industry average.

California.--Two of the three mills supplying data tended to be below the industry average and one above it. [9]

This analysis also indicated a slight upward trend in United States flour mill manufacturing costs during the entire period 1948-55. On the other hand, flour mill manufacturing costs in the Pacific Northwest and Intermountain regions combined disclose a slight downward trend in costs from 1951 to 1956, reaching equality with the United States average cost in 1954.

When labor costs were expressed as a percentage of total manufacturing costs and this ratio was compared for individual plants by year, no significant differences were noted between areas. About one-half of the annual ratios during an 8-year period in seven plants in the Pacific Northwest and in three plants in California were above the United States annual average, and one-half were below. More than one-half of the ratios were below the United States annual average in the Intermountain region, although this was primarily due to the influence of one plant and the small number of ratios available.

It appears, therefore, that operating costs have not been an important factor in the location of flour mills or in influencing the changing competitive situation. Not only do the analyses indicate no significant differences in this factor among the various areas, but it also must be remembered that operating costs represent less than one-fifth of total costs. The fact that each area contains both large and small mills undoubtedly explains the relative uniformity of operating costs.

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[9] Based upon cost data for the years 1948, 1950, 1952, and 1954.

SUPPLY

In an industry such as flour milling, supply factors are certain to influence the changing competitive situation. In flour, the cost of materials, primarily wheat, constitutes about 83 percent of the value of shipments. This section, therefore, analyzes the relative impact of the cost of wheat and the cost of transporting the wheat or flour to the various markets from different origins in the Pacific Slope States.

The relative supply situation for wheat in the Pacific Slope States is a factor in the industry. In general, the supply situation for wheat in the Pacific Northwest is one where (1) inshipments are not large and are primarily a different type of wheat from that grown in the area, (2) production of white wheat is large relative to that of other classes of wheat, and (3) stocks of white wheat are large relative to other wheats and also relative to the area's production. The general impact of these supply factors is a tendency to lower the price of locally produced wheat relative to other types of wheat.

Supplies of Wheat

Wheat Production

Wheat production in the Pacific Slope States is unevenly distributed. In 1950, for example, Oregon, Washington, and northern Idaho accounted for about 70 percent of the production on the Pacific Slope. Much of this production is concentrated in specified areas such as the Palouse area. Southern Idaho and Utah produced about 20 percent and California about 8 percent. This area produces about 12 percent of the Nation's wheat supply. But it produces the bulk of the Nation's supply of white wheat, primarily in the Pacific Northwest. In 1949 about two-thirds of the hard red wheat grown in the Pacific Slope area was produced in southern Idaho and Utah. 10/

Wheat production in the Pacific Northwest has been increasing since 1909 both in actual terms and relative to the United States production. Production of wheat in the region during the period 1945-54 was nearly two-thirds greater than in the 1924-29 period (table 25). Production in all States increased, but the major increase occurred in the State of Washington, where wheat production increased 87 percent. Wheat production in the region increased from 8.2 percent of the United States production in 1924-29 to 10.2 percent in 1949-54.

The types of wheat represented in this total production also have been shifting. For example, in 1919 and 1924 white wheat represented about 54 percent of the total Oregon and Washington production and in 1952 and 1953 about 84 percent (table 26). Hard red wheats decreased from about 24 percent of the total to about 12 percent during this period.

Many different varieties of wheat are produced in the Pacific Northwest. Some of the major varieties are listed in table 27 and are rated by the millers to show their relative value for the different types of flour produced. To give

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10/ See reference in footnote 1.

Table 25.--Wheat production in selected States and areas, 1924-30, 1934-53

Crop years	Wheat production							Percentage of U. S. crop produced in the Pacific Northwest
	Oregon	Washington	North Idaho	Pacific Northwest	South Idaho	U. S. excluding Pacific Northwest	United States	
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Percent
1924-29 average	20,754	39,523	7,952	68,228	16,479	758,164	826,392	8.26
1929-30 average	20,096	41,990	9,354	71,440	14,872	720,713	792,153	9.02
1934-39 average	18,327	46,627	8,613	73,568	16,820	642,029	715,597	10.28
1939-44 average	19,263	51,371	7,856	78,489	16,781	783,715	862,204	9.10
1944	24,200	62,673	8,943	95,816	22,908	964,295	1,060,111	9.04
1945	21,810	61,512	10,187	93,509	22,634	1,014,114	1,107,623	8.44
1946	25,168	77,965	10,903	114,036	24,029	1,038,082	1,152,118	9.90
1947	22,232	64,750	10,419	97,401	27,516	1,261,510	1,358,911	7.17
1948	29,954	79,268	6,741	115,963	27,842	1,178,948	1,294,911	8.96
1949	22,698	60,146	11,110	93,954	26,996	1,004,461	1,098,415	8.55
1950	23,693	69,692	9,415	102,800	27,935	916,589	1,019,389	10.08
1951	28,999	75,152	9,294	113,445	28,674	867,365	980,810	11.57
1952	32,016	80,541	12,512	125,069	29,446	1,173,888	1,298,957	9.63
1953	34,298	84,150	12,711	131,159	35,706	1,037,427	1,168,586	11.22

Table 26.--Percentage distribution, by classes, of wheat produced in Oregon and Washington, and in Northern Idaho, selected years 1919-53 1/

States and years	White	Hard red winter	Hard red spring	Soft red winter	Unaccounted for	Total
	Percent	Percent	Percent	Percent	Percent	Percent
Oregon and Washington:						
1919	58.6	9.4	8.4	9.8	13.8	100.0
1924	52.6	25.1	4.2	11.0	7.1	100.0
1929	63.7	22.3	2.8	7.8	3.4	100.0
1934	65.3	25.0	2.0	5.6	2.1	100.0
1939	65.8	25.8	2.0	4.3	2.1	100.0
1944	74.6	22.6	.7	2.1	1/	100.0
1949	72.7	24.1	1.7	1.0	.5	100.0
1950	76.9	21.8	.1	1.2	1/	100.0
1951	77.3	21.7	.2	.8	1/	100.0
1952	80.0	18.9	.1	1.0	1/	100.0
1953	88.0	11.5	.1	.4	1/	100.0
Northern Idaho:						
1950	96.4	2.1	1.2	.3	1/	100.0
1951	95.0	2.0	2.7	.3	1/	100.0
1952	98.9	.9	.1	.1	1/	100.0
1953	95.5	4.2	.3	1/	1/	100.0

1/ Less than 0.06 percent.

1919-49, "Distribution of the Varieties and Classes of Wheat in the United States in 1949," U. S. Dept. Agr. Circular 861, March 1951. Beginning with 1950, data are from annual reports entitled "Pacific Northwest Wheat (year) By Varieties" prepared and distributed by the Pacific Northwest Crop Improvement Association, Walla Walla, Wash.

some idea of the volume of production, table 27 summarizes these varieties under specific classes of wheat, such as white wheat. Table 26 indicates that this type of wheat represented more than 84 percent of the production in the region.

Baart is the only wheat produced in volume in the region that is rated "excellent" for baker and family flours. Turkey-Rio, Bluestem, and Ridit were rated "good." Three varieties were rated "excellent" for cake flour, and Albit has the rating for cookie flour. Pacific Northwest millers agree that the protein content of south Idaho and Utah wheat is higher than that of their local wheat. 11/ This should allow millers in south Idaho, Utah, and California to use more local wheat, as contrasted to Montana wheat, in a given type of flour than can the millers located in the Pacific Northwest.

H. F. Hollands, 11/ in his analysis of the question why the production of hard wheats has decreased so rapidly in the Pacific Northwest when the local millers are short of hard wheat and there is a surplus of soft wheat, indicates that, although available data do not permit the isolation and measurement of the several forces that encouraged an increased soft wheat production and a decreased production of hard wheats, the following factors are at work:

1. Soft white wheats, particularly Elgin and Elmer, outyield all other varieties, in some instances by as much as 20 bushels per acre. It would require a market price and price support structure which gives a tremendous premium for hard wheat over soft white wheat to shift production back to the hard wheats.

2. Over a large area, the hard wheat produced is often not of a good enough quality to be used for bread flour.

Carryover Stocks

In only 2 years since 1940 have the carryover stocks in the Pacific Northwest been significantly under an average year's production. The overall trend in stocks has been upward, and in 1954 and 1955 the stocks approached two normal yearly crops. With production in the region representing between 8 and 10 percent of the United States production, stocks in the region represent between 9 and 11 percent of the total United States stocks (table 28).

No data are available to indicate the type or variety of the wheat carried over as stocks. However, stocks can be considered to be distributed in about the same proportion as production, except for a tendency for the lower quality wheats to move into storage under the price support program somewhat more rapidly than the quality wheats. 12/ Oregon and Washington farmers utilize the price support program relatively more than the remaining wheat producers. Between 1952 and 1953, 47 percent of the region's wheat was placed in Commodity Credit Corporation storage compared with about 31 percent for the entire Nation.

11/ Hollands, H. F. Pacific Northwest Wheat. Oreg. Agr. Expt. Sta. Bul. 556, May 1956.

12/ Harston, Clive R. Marketing High Protein Wheat in the Northern Great Plains. U. S. Agr. Mktg. Serv. and Mont. State College. Mont. Agr. Expt. Sta. Bul. 527, 138 pp. January 1957.

Table 27.--Millers' ratings of wheat varieties for production of flour for specified uses, 1954

Variety	Baker	Family	Sweet dough	Cracker	Pastry	Cake	Cookie
White:							
Forty fold ...	Poor	Poor	Poor	Fair	Good	Good	Good
Requa	Poor	Poor	Fair	Fair	Good	Fair	Good
Federation ...	Fair	Fair	Fair	Good	Good	Good	Good
Ideal	Poor	Poor	Poor	Fair	Good	Good	Good
Rex	Poor	Poor	Poor	Fair	Fair	Fair	Fair
Albit	Poor	Poor	Poor	Fair	Good	Good	Excell.
Hybrid 128 ...	Poor	Poor	Poor	Fair	Good	Fair	Good
Hymar	Poor	Poor	Poor	Fair	Good	Good	Good
Baart	Excell.	Excell.	Excell.	Good	Fair	Good	Fair
Bluestem	Good	Good	Good	Good	Fair	Good	Fair
Elgin	Poor	Poor	Poor	Fair	Good	Excell.	Good
Elmar	Poor	Poor	Poor	Fair	Good	Excell.	Good
Brevor	Poor	Poor	Fair	Fair	Good	Excell.	Good
Marfed	Poor	Fair	Fair	Fair	Fair	Fair to good	Fair
Orfed	Poor	Fair to poor	Fair	Fair	Fair to good	Fair to good	Fair
Hard Red Winter:							
Turkey-Rio ...	Good	Good	Fair	Fair	Poor	Poor	Poor
Ridit	Good	Good	Fair	Fair to poor	Poor	Poor	Poor
Wasatch	Fair	Fair to good	Fair	Fair to poor	Poor	Poor	Poor
Hard Red Spring, Marquis	Excell.	Excell.	Good	Poor	Poor	Poor	Poor
Soft Red Spring, Triplet	Poor	Poor	Fair	Good	Good	Good	Good

Hollands, H. F. Pacific Northwest Wheat. Oreg. Agr. Expt. Sta. Bul. 556, May 1956, p. 10.

Table 28.--Wheat stocks in the Pacific Northwest as percentage of U. S. stocks, by storage position, 1935-55

Year	Farm	Interior mill: elevator and warehouse	Merchant mills	Terminal and CCC	Total all positions
	Percent	Percent	Percent	Percent	Percent
1935 ...	5	33	5	7	10
1936 ...	6	35	4	6	12
1937 ...	6	33	3	3	10
1938 ...	5	34	4	6	11
1939 ...	6	27	4	4	9
1940 ...	4	23	5	3	8
1941 ...	6	25	5	4	9
1942 ...	5	26	4	3	9
1943 ...	6	27	5	3	9
1944 ...	5	28	5	3	9
1945 ...	5	33	5	4	10
1946 ...	5	34	5	8	11
1947 ...	3	21	5	3	7
1948 ...	4	26	6	5	9
1949 ...	4	21	5	3	8
1950 ...	5	24	5	5	10
1951 ...	5	25	6	5	10
1952 ...	4	20	5	4	8
1953 ...	5	21	6	4	10
1954 ...	5	17	5	11	11
1955 ...	5	13	5	15	11

Inshipments

The Pacific Slope States receive almost no wheat and flour shipments from the eastern part of the United States. However, they receive by rail an amount equivalent to about 25 percent of their total rail shipments of wheat and 10 percent of their total rail shipments of flour from Montana, Wyoming, Colorado, and New Mexico (tables 29 and 30). A third of this flour terminates in California, and the origins of the wheat indicate that it is a higher protein wheat which is shipped in to fill the export demand for this high protein wheat or to supplement local wheats in the milling of baker and family flour.

Supply Cost of Wheat or Flour

Millers long have recognized the great influence of the cost of wheat and transportation costs upon the size of the market available to a given mill or group of mills. Not only does the cost of material, primarily wheat, represent about 83 percent of the value of shipments, but these costs may or may not compensate for the difference in transportation costs between different origin

Table 29.--Wheat: ICC waybill sample of rail shipments, 1952

Destination	Origin											Percentage distribution of U. S. shipments, by destination
	Calif.	Idaho	Wash.	Oreg.	Ariz.	Utah	Nev.	Total Pacific Slope	Four Mountain States	Other States	Total U. S.	
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Percent
Pacific Slope:												
California	904	731	346	147	0	1,083	38	3,249	208	86	3,543	0.98
Idaho	0	1,139	0	2,368	0	0	0	3,507	0	0	3,507	.96
Washington	0	2,206	11,344	3,099	0	203	0	16,852	5,367	0	22,219	6.12
Oregon	0	1,095	5,447	0	0	50	0	6,592	2,366	0	8,958	2.46
Arizona	0	0	0	0	0	0	0	0	0	0	0	.00
Utah	0	3,192	62	55	0	254	0	3,563	690	0	4,252	1.18
Nevada	0	0	0	0	0	0	34	34	0	0	34	.01
Total	904	8,363	17,199	5,669	0	1,590	72	33,797	8,631	86	42,514	11.71
Four Mountain States	0	205	57	0	0	108	0	370	4,664	847	5,881	1.62
Other States	118	577	279	0	0	277	0	1,251	21,046	292,461	314,758	86.67
Total United States	1,022	9,145	17,535	5,669	0	1,975	72	35,418	34,341	293,394	363,153	100.00
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
Percentage distribution of U. S. shipments, by origin	0.28	2.52	4.83	1.56	0.00	0.54	0.02	9.75	9.46	80.79	100.00	

Interstate Commerce Commission. Carload Waybill Analyses, 1952. Statement No. 5143.

Table 30.--Wheat flour: ICC waybill sample of rail shipments, 1952

Destination	Origin											Percentage distribution of U. S. shipments, by destination
	Calif.	Idaho	Wash.	Oreg.	Ariz.	Utah	Nev.	Total Pacific Slope	Four Mountain States	Other States	Total U. S.	
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Percent
Pacific Slope:												
California	1,398	241	110	1,176	0	934	0	3,859	210	181	4,250	4.86
Idaho	34	0	0	0	0	23	0	57	32	0	89	.11
Washington	80	0	511	347	0	46	0	984	85	0	1,069	1.22
Oregon	99	0	855	183	0	81	0	1,218	138	35	1,391	1.59
Arizona	104	0	0	0	0	0	0	104	156	0	260	.30
Utah	0	0	0	0	0	72	0	72	30	0	102	.11
Nevada	0	0	0	0	0	66	0	66	0	0	66	.08
Total	1,715	241	1,476	1,706	0	1,222	0	6,360	651	216	7,227	8.27
Four Mountain States ..	0	150	0	0	0	87	0	237	100	111	448	.51
Other States	0	420	0	135	0	40	0	595	1,521	77,742	79,858	91.22
Total United States	1,715	811	1,476	1,841	0	1,349	0	7,192	2,272	78,069	87,533	100.00
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
Percentage distribution of U. S. shipments, by origin	1.96	0.93	1.69	2.10	0.00	1.54	0.00	8.22	2.60	89.18	100.00	

Interstate Commerce Commission. Carload Waybill Analyses, 1952. Statement No. 5143.

areas and the major market. Normally this adjustment occurs in a free market. Thus, if the millers located in the Pacific Northwest are competing with millers in another area who have a 10-cent freight rate advantage, but who pay 10 cents more for wheat, they are presumably equal competitively. However, if the Pacific Northwest millers were faced with both a flat percentage increase in rail rates and a relative increase in the cost of wheat, they would have to operate at a competitive disadvantage.

Transportation Rates

With this sort of problem, it seems appropriate to consider the actual rail rate situation and see what relative impact the increasing rail rates have had upon the millers in the different geographic areas. It is necessary to choose specific dates for purposes of comparison. Since the problem seems to have magnified since 1947, according to the industry, June 30, 1946, seems an appropriate preperiod date. December 28, 1956, seems an appropriate comparison date.

A comparison of the influence of the changes in rail rates during this period should adequately indicate the trend of influence, even though it may not accurately show the magnitude of the influence.

Eastern Market

Railroad rates on grain and grain products have been subject to frequent upward revision since 1946 (table 31). All increases have been made by applying a percentage increase to the preceding rates.

These increases resulted in a considerable widening of the spread between the Pacific Northwest rates and the rates from the white wheat area of the Eastern North Central Region to New York City (table 32). The spread in rail rates in 1946 put the Pacific Northwest wheat at an approximate 65-cent disadvantage per hundredweight. This disadvantage increased to about $1.05 in 1957.

Table 33 shows that both the rail and water shipments to the East decreased from a sizable amount of flour in 1946 to a negligible amount in 1956. It also shows the approximate rail and water rates in effect for shipments of this type.

These relative increases in transportation costs from the Pacific Northwest appear to have been very influential in the loss of the eastern markets. This conclusion seems to be quite obvious when the following are noted:

1. The large relative increases in the cost of transportation experienced by the Pacific Northwest millers,

2. The obvious correlation between these relative increases in the transportation costs and the decrease in volume shipped, and

3. The high degree of correlation between wheat prices in various areas of the country. 13/ For example, Ohio farmers received 2.36 and 1.99 and Washington wheat producers 2.23 and 1.93 per bushel of wheat in 1947 and 1956, respectively.

13/ See reference in footnote 11.

Table 31.--History of rates on 100 pounds of wheat and flour from the Pacific Northwest to Minneapolis and Duluth, Minn., Omaha, Nebr., Kansas City, Mo., and Sioux City, Iowa, Federal tax excluded 1946-56

Date	Rate	Case and nature of the change
	Cents	
July 1, 1946	59.5	Ex parte 148-162, 3 percent increase
January 1, 1947	66.5	Ex parte 162, 15 percent increase
August 21, 1948	80.0	Ex parte 166, 20 percent increase
September 1, 1949 ..	86.5	Ex parte 168, 8 percent increase
May 17, 1952	97.0	Ex parte 175, 12 percent increase
September 3, 1954 1/	85.5	Proportional rate - voluntary carrier Revision - ex parte 175, increase added
March 7, 1956 1/ ...	90.0	Ex parte 196, 5 percent increase
December 28, 1956 1/	94.5	Ex parte 206, 6 percent increase

1/ Applies only as a proportional rate on traffic moving beyond. Minimum carload weight 80,000 pounds.

Unpublished Verified Statement of Frank P. Aughnay, Secretary, Pacific Northwest Grain and Grain Products Association, Exhibit A, p. 13. Ex Parte 206 Hearing, Interstate Commerce Commission, March 25, 1957.

California Market

Rail rate increases from the Pacific Northwest to the California market have been even more rapid in percentage terms than those to the East when contrasted with those from other Pacific Slope States (table 34). Compound increases from June 1946 to December 1957 equal 91 percent. The Federal tax of 3 percent further compounds this increase. Again all rate increases were based upon percentages.

An indication of the effect these increased rail rates have had on interstate competition for the California market is shown in table 35. The table was constructed to show the influence of the increased rail rates by:

1. Assuming a constant cost of the wheat at each source equivalent to the 1946 State price support rates. 14/

14/ Under this assumption, the relative levels of price supports in 1946 among the various sources have some influence on the analysis, but for all practical purposes the results are nearly the same as those which would result from a simple study of the relative transportation rates.

Table 32.--Rail rates per 100 pounds on carload lots of flour shipped to New York, N. Y. from Pacific Northwest and representative points of production in Illinois, Indiana, Ohio, and Michigan, June 30, 1946, and December 28, 1956

Origin	June 30, 1946		December 28, 1956	
	Rate	Difference from Pacific Northwest rate	Rate	Difference from Pacific Northwest rate
	Cents	Cents	Cents	Cents
Pacific Northwest	97.5	---	171.5	---
Alton, Illinois	38.5	-59.0	76.0	- 95.5
Chicago, Illinois	35.0	-62.5	69.5	-102.0
Evansville, Indiana	37.5	-60.0	73.0	- 98.5
Indianapolis, Indiana	30.5	-67.0	59.0	-112.5
Cleveland, Ohio	25.5	-72.0	50.5	-121.0
Toledo, Ohio	26.5	-71.0	52.0	-119.5
Grand Rapids, Michigan ...	33.5	-64.0	65.5	-106.0
Hillsdale, Michigan	30.5	-67.0	59.0	-112.5

Unpublished Verified Statement of Frank P. Aughnay, Secretary, Pacific Northwest Grain and Grain Products Association, Exhibit A, p. 16. Ex Parte 206 Hearing, Interstate Commerce Commission, March 25, 1957.

Tariff Authority:

Trans-Continental Freight Bureau Tariff Nos. 2-G-I.C.C. No. 1394; 2-H-I.C.C. No. 1411; 45-C-I.C.C. No. 1477; 45-D-I.C.C. No. 1491; 45-E-I.C.C. No. 1510; 45-F-I.C.C. No. 1531; 45-G-I.C.C. No. 1555; 45-H-I.C.C. No. 1562.
Western Trunk Lines Tariff Nos. 332-A-I.C.C. No. A-2743; 332-B-I.C.C. No. A-2942; 332-C-I.C.C. No. A-3455; 332-D-I.C.C. No. A-3712; 332-E-I.C.C. No. A-3866, L. E. Kipp, Agent.
Central Territory Railroads Tariff Nos. 245-F-I.C.C. No. 3055; 245-G-I.C.C. No. 3356; 245-H-I.C.C. No. 4403.
Southern Freight Tariff Bureau Tariff Nos. 94-P-I.C.C. No. 677; 94-R-I.C.C. No. 881; 94-S-I.C.C. No. 1037; 94-T-I.C.C. No. 1128.

Table 33.--Influence of rail and water transportation rate increases on quantity of flour shipped to the eastern market, 1946-56

Year	December rail rate per cwt.	December water rate per cwt.	Rail shipments to-- North of Ohio River	Rail shipments to-- South of Ohio River	Water shipments to-- North Atlantic	Water shipments to-- South Atlantic
	Cents	Cents	1,000 cwt.	1,000 cwt.	1,000 cwt.	1,000 cwt.
1946	59.5	43.0	2,554	419	591	7
1947	66.5	67.5	1,336	193	297	6
1948	80.0	76.0	449	87	16	1/
1949	86.5	83.0	325	103	24	4
1950	86.5	83.0	241	95	33	19
1951	86.5	85.0	164	56	29	19
1952	97.0	85.0	220	70	41	11
1953	97.0	93.0	99	43	24	2
1954	85.5	1/	147	41	38	6
1955	85.5	1/	150	39	7	5
1956	90.0	1/	120	25	3	4

1/ Not given.

Pacific Northwest Wheat, Oreg. Agr. Expt. Sta. Bul. 556, p. 42, and Aughnay, Verified Statement, Exhibit A, Ex Parte 206, p. 6.

2. Assuming that either the wheat moves all the way to the market city for milling, or that it is milled at the origin or an in-transit point and all the flour and byproducts move on to the market city.

3. Assuming that even though some of the routes used in the analysis, especially those from southern Idaho to Portland, do not actually move much grain, they do show the potential influence of the rail rate increases.

This analysis shows that, based upon the rail rates in effect on June 30, 1946, Pacific Northwest sources had about a 6-cent per bushel advantage over those in southern Idaho in supplying the Pacific Northwest market. They operated at about a 5-cent disadvantage in the northern California market (San Francisco) in 1946 and about a 10-cent per bushel disadvantage in the southern California market in 1946.

By 1956, on the basis only of changes in rail rates, the Pacific Northwest millers' advantage had increased to about 14 cents in the local market. Their disadvantage in supplying the northern California market remained at 5 cents and their disadvantage to the southern California market more than doubled to 21 cents per bushel.

Table 34.--Freight rate increases on wheat relevant to the California market, 1946-57

Date	Increase authorized
July 1, 1946	Ex parte 148-162 restored ex parte 148, plus 3 percent
January 1, 1947 ..	Ex parte 162B, plus 15 percent in lieu of previous 3 percent
October 13, 1947 .	Ex parte 166, plus 10 percent
January 15, 1948 .	Ex parte 166A, plus 20 percent in lieu of previous 10 percent
January 11, 1949 .	Ex parte 168, plus 8 percent
April 19, 1951 ...	Ex parte 175, plus 2 percent
September 12, 1951	Ex parte 175A, plus 6 percent in lieu of previous 2 percent
May 17, 1952	Ex parte 175B, plus 12 percent in lieu of previous 6 percent
March 7, 1956	Ex parte 196A, plus 5 percent
December 28, 1956	Ex parte 206, plus 5 percent
August 26, 1957 ..	Ex parte 206A, plus 9 percent in lieu of previous 5 percent
Compound increase	91 percent
Federal tax	3 percent additional

Unpublished records of a cooperating flour milling company.

Increases in transportation rates have tended to decrease the geographic size of the market area available to the flour millers, in this instance represented by those in the Pacific Northwest. The fact that these increases were based upon percentages explains why the periphery of the market tends to retract so rapidly. There were similar reactions due to the rail rate increases in San Francisco, the big increase in cost from both areas to Los Angeles, and the largest increase, shown earlier, with respect to the Eastern market.

Thus, the rail rate increases have tended to help the Pacific Northwest millers retain their local market, left them in about the same relative position with regard to the northern California market, and tended to make it more difficult for them to compete in the southern California market. These conclusions are based on the assumption that the cost of wheat at the origin remained the same and that the origins used are representative of the average changes that occurred in the costs of transporting wheat and flour by rail.

Table 35.--Wheat: Influence of rail rate increases on competition for the Pacific Northwest and the California markets, per bushel 1946 and 1956 1/

Source, and cost item	To Portland		To San Francisco		To Los Angeles	
	1946	1956	1946	1956	1946	1956
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Pacific Northwest:						
Dayton, Wash.:						
Cost of wheat	1.419	1.419	1.419	1.419	1.419	1.419
Rail rate	.1273	.2225	.2928	.5222	.3947	.7076
Total	1.5463	1.6415	1.7118	1.9412	1.8137	2.1266
Lind, Wash.:						
Cost of wheat	1.419	1.419	1.419	1.419	1.419	1.419
Rail rate	.1464	.2627	.2992	.5346	.4010	.7200
Total	1.5654	1.6817	1.7182	1.9536	1.8200	2.1390
Pendleton, Oreg.:						
Cost of wheat	1.451	1.451	1.451	1.451	1.451	1.451
Rail rate	.1210	.2163	.2864	.5161	.3883	.6829
Total	1.5720	1.6673	1.7374	1.9671	1.8393	2.1339
Potlatch, Idaho:						
Cost of wheat	1.366	1.366	1.366	1.366	1.366	1.366
Rail rate	.1545	.2874	.2966	.5438	.3955	.7262
Total	1.5205	1.6534	1.6626	1.9098	1.7615	2.0922
Southern Idaho:						
Boise, Idaho:						
Cost of wheat	1.363	1.363	1.363	1.363	1.363	1.363
Rail rate	.2228	.3893	.3183	.5686	.3565	.5686
Total	1.5858	1.7523	1.6813	1.9316	1.7195	1.9316
Twin Falls, Idaho:						
Cost of wheat	1.363	1.363	1.363	1.363	1.363	1.363
Rail rate	.2800	.4759	.2737	.4913	.3374	.5346
Total	1.6430	1.8389	1.6367	1.8543	1.7004	1.8976
Pacific Northwest, average	1.5510	1.6610	1.7075	1.9429	1.8086	2.1229
Southern Idaho, average	1.6144	1.7956	1.6590	1.8930	1.7100	1.9146
Advantage Pacific Northwest	.0634	.1346	---	---	---	---
Advantage Southern Idaho	---	---	.0485	.0499	.0986	.2083

1/ Assuming constant costs of wheat equivalent to the 1946 State price support rates. Rail rates are for June 30, 1946, and December 28, 1956, and include Federal tax.

It is impossible, of course, to obtain all rates and weight them by actual volumes transported. It is also impossible to consider all the local decisions concerning the producer's source of shipping points. Railroad rates from 10 other sources in southern Idaho and 7 other sources in the Pacific Northwest (table 36) indicate that any of these other sources and routes could have been used with approximately the same results.

Due to in-transit privileges, approximately the same rates are used for direct movement from Great Falls, Mont., to San Francisco or Los Angeles, and for milling in transit at Ogden, Utah; Idaho Falls, Idaho; and Seattle, Wash., for later shipment to San Francisco or Los Angeles. The possible use, and thus the influence, of in-transit rates from local sources has been recognized in the preceding analyses, at least to the degree that the sample sources represent in-transit shipments from the area. However, to the extent that millers in the Pacific Northwest, and those in south Idaho, Utah, and California, use Montana wheat in their flour, the in-transit privilege equalizes competition on this wheat.

To the extent that the use of south Idaho or Utah wheats decreases the need for Montana wheat in the flour mills located in the States just mentioned or in California, these mills pick up an additional advantage over those located in the Pacific Northwest, since the transportation costs are less. Use of truck transportation has been shown to be growing rapidly, and the interest in and use of it seems to be greatest in California and the Intermountain area. To the extent that there is an increased use of trucks and that the rates are cheaper, the wheat or flour produced in the California and Intermountain area will again have an additional differential advantage over that produced in the Pacific Northwest. Thus, this additional advantage is available to millers located in California through truck shipments of wheat and to some extent to millers in south Idaho and Utah through the more limited truck shipments of flour.

Pacific Northwest millers do have an in-transit advantage through the use of Montana wheat in exports. In-transit substitution of one kind of wheat for another or of flour for wheat permits them to substitute local wheat for the Montana wheat and still use the cheaper in-transit freight rate balance to Los Angeles from the Montana source. With the equivalent of 1 out of every 4 pounds of flour produced in the Pacific Northwest moving into the export market, this item could become very important in the competitive relationship with respect to transportation rates. However, it appears that not many flour millers are active in exporting large quantities of wheat and therefore the importance of this substitution hinges primarily on the volume of Montana wheat used in the export flour. The degree of influence, however, cannot be estimated because of the lack of information available on the amount of Montana flour contained in either the export or domestic flours. Two Pacific Northwest millers reported that the amount of Montana wheat contained in their flour had increased 25 percentage points between 1951 and 1956. One having records back to 1946 indicated an increase of 32 percentage points during the entire period.

Farm Prices of Wheat

The influence of the cost of wheat to the miller at the different points of origin listed in table 35 will be analyzed in much the same manner. Again, Table 36.--Rail rates per hundredweight on grain and grain products to Los Angeles from representative origins in South Idaho and the Pacific Northwest, June 30, 1946, and December 28, 1956

Origin	Distance	Route	Rate June 30, 1946	Rate December 28, 1956	Increase December 28, 1956 over June 30, 1946	
	Miles	Number	Cents	Cents	Cents	Percent
South Idaho						
Notus, Idaho	1,205	1	56	93	37	66.1
Weiser, Idaho	1,248	1	57	93	36	63.2
Boise, Idaho 1/			59	95		
Gooding, Idaho	1,070	1	55	86½	31½	57.3
Pocatello, Idaho	946	1	49	86½	37½	76.5
Twin Falls, Idaho 1/			56	89		
Kimball, Idaho	979	1	50	91	41	82.0
St. Anthony, Idaho	1,033	1	53	91	38	71.7
Chester, Idaho	1,039	1	53	92	39	73.6
Victor, Idaho	1,093	1	55	92	37	67.3
Boise, Idaho	1,180	1	56	92	36	64.8
Caldwell, Idaho	1,198	1	56	92	36	64.8
Pacific Northwest						
Pendleton, Oregon	1,307	2	60	110½	50½	82.5
Waitsburg, Washington	1,364	2	62	114½	52½	84.7
Sprague, Washington	1,428	3	63	116½	53½	84.9
Hartline, Washington	1,451	3	64	117½	53½	83.6
Rathdrum, Idaho	1,463	4	65	119½	54½	83.8
Dayton, Washington			66	118		
Colville, Washington	1,484	5	67	123½	56½	84.3
Kootenai, Idaho	1,539	3	68	124½	56½	83.1
Lind, Washington 1/			67	120		
Pendleton, Washington 1/			65	114		
Potlatch, Idaho 1/			66	121		

1/ Inserted from table 35.

Unpublished verified statement of Frank P. Aughnay, Secretary, Pacific Northwest Grain and Grain Products Association, Exhibit A, pp. 19 and 20. Ex Parte 206 Hearing, Interstate Commerce Commission.

Rates increased per ex parte Nos. 162, 166, 168, 175 and 196, interim increase ex parte 206 and as proposed in January 11, 1957 petition ex parte 206.

Explanation of Routes

(1) U. P., Colton, Calif., S.P.
(2) U. P., East Portland, Ore., S.P.
(3) N. P., Pasco, Wash., SP&S, Portland, Ore., S.P.
(4) CMSP&P, Spokane, Wash., U.P., East Portland, Ore., S.P.
(5) G. N., Chemult, Ore., S.P.

Tariff Authority

Rates: Pacific Southcoast Freight Bureau Tariff No. 242-B, I.C.C. No. 1435
Pacific Southcoast Freight Bureau Tariff No. 241-C, I.C.C. No. 1474 and
Tariff No. 241-E, I.C.C. No. 1577
Distances: Union Pacific Railroad Tariff No. 4000-A, I.C.C. No. 5325
Southern Pacific Co., Tariff No. 420-D, I.C.C. No. 4687
Great Northern Railway Co., Tariff No. 400-C, I.C.C. No. A-6710
Northern Pacific Railway Co., Tariff No. 1500-1, I.C.C. No. 9759
CMS & P&P Railroad Co., G.F.D. No. 11850, I.C.C. No. B-5894
SP&S Ry. Co., G.F.O. No. 685-K, I.C.C. No. 732

the objective will be to determine the direction and strength of the influence of the cost of wheat in each market area rather than the actual magnitude of this influence.

The major types of wheat are hard spring, hard winter, soft winter, and white wheat. Each of these has been shown in table 27 to have different values for different flours and as a result they bring different prices in the market place. White wheat apparently has the greatest variation in quality among the varieties included in each category, and the tendency of the Pacific Northwest producers to plant more acreage to the high-yielding but poorer quality varieties has been shown earlier.

Detailed price data are not available during a long time series for these specific types of wheat at specific origins, nor are data on the quantities of each type of wheat used by the flour millers available. Available data do indicate, however, that, given the present structure of the market, the prices of all types of wheat tend to move together, as is indicated by the following measures of correlation:

Annual Average Crop-Year Prices [15]

1909-53 Index of prices received for all commodities by United States farmers and prices of No. 1 soft white wheat in Portland .... r = .9557

1900-53 Index of prices received for all commodities by Oregon farmers and prices of No. 1 soft white wheat in Portland .... r = .9549

1900-53 Index of Oregon farm prices of wheat and prices of No. 1 soft white wheat in Portland .... r = .9557

1900-51 Washington farm prices of wheat and Oregon farm prices of wheat .... r = .9979

1909-51 Prices of wheat in selected soft white wheat States and Oregon farm prices of wheat .... r = .9896

1909-38 Liverpool wheat prices and prices of No. 1 soft white wheat in Portland .... r = .9295

Average Monthly Prices [15]

1909-52 No. 2 hard winter wheat, Kansas City, and No. 1 soft white wheat, Portland .... r = .9819

1909-52 No. 2 red winter wheat, Chicago, and No. 1 soft white wheat, Portland .... r = .9773

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[15] Hollands, H. F. Pacific Northwest Wheat. Oreg. Agr. Expt. Sta. Bul. 556, 48 pp., 1956.

Available price information permits the computation of differentials between the prices received by farmers in Idaho and Washington (table 37). If it is assumed either that one type of wheat was produced in each State, or that the same proportion of each State's production was represented by each type of wheat, these differentials have progressed about as expected along with the inflation of wheat prices.

Table 38 also indicates that there is a high degree of correlation between the price differential and the price support differential. This correlation is high enough to permit the analysis of the influence of the price support program and the influence of the total cost of wheat to the millers, at the same time. Moreover, the price support program has been effective in that it maintained or raised wheat prices at the farm in the area during most of the period analyzed.

However, the price differentials and the price support differentials did not react to the changing type of wheat production which occurred during the period in the States of Washington and Idaho (tables 37 and 38). They tended to increase with the inflation in wheat prices rather than decrease with the relative decrease in the quality of the type of wheat produced in Washington as contrasted with Idaho. This occurred despite the fact that white wheats were in surplus and hard wheats were in short supply in the Pacific Northwest, as shown earlier.

Using the price support levels, because (1) this is primarily a price differential analysis and the differentials coincide quite closely during most years, and because (2) it permits an easier breakdown into the north and south Idaho situations, table 39 analyzes the influence of changes in the cost of wheat. This analysis is based upon the following assumptions.

1. That the price differentials for the price support program in Oregon, Washington, and northern Idaho over southern Idaho approximate or at least correlate with the comparable price differentials for comparable types of wheat.

2. That the rail transportation rate of June 30, 1946, remained in effect through December 28, 1956. 16/

In 1946, differentials in the cost of wheat to the miller resulted in an advantage to the Pacific Northwest miller of 6 cents per bushel in supplying the local market with local wheat flour. South Idaho or California millers, however, had an advantage of 5 cents in supplying the northern California market (table 39).

In 1956, the Pacific Northwest miller would have had to compete for and use southern Idaho wheat in order to compete in his own market, if the 20-cent wheat price support differential had been effective and transportation rates had not increased. If this high differential actually existed over a period

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16/ This assumption is necessary to obtain any valid indication of the influence of price differentials for the cost of wheat in the different markets. In San Francisco, where the rail rates are about the same from all origins, the influence is the same as the differential in the price support rates.

Table 37.--Estimated wheat price per bushel (averages of all grades and classes) 1939-57

Year	Season average price received by farmers			Available simple average price support differentials	Percent of State production in white wheat (available years)	
	Washington	Idaho	Differential		Washington	Idaho
	Dollars	Dollars	Dollars	Dollars	Percent	Percent
1939	0.65	0.60	+0.05		62	54
1940	.62	.58	+ .04	+ .06		
1941	.85	.83	+ .02	+ .07		
1942	1.03	1.03	.00	+ .07		
1943	1.28	1.28	.00			
1944	1.34	1.30	+ .04		70	56
1945	1.41	1.36	+ .05			
1946	1.75	1.73	+ .02	+ .05		
1947	2.23	2.22	+ .01	+ .07		
1948	1.95	1.82	+ .13	+ .12		
1949	1.90	1.77	+ .13		65	52
1950	1.98	1.85	+ .13			
1951	2.13	1.97	+ .16			
1952	2.11	1.94	+ .17	+ .19		
1953	2.10	1.96	+ .14			
1954	2.13	1.98	+ .15		78	50
1955	1.96	1.82	+ .14			
1956	1.93	1.84	+ .09	+ .20		
1957	1.96	1.80	+ .16			

Table 38.--Wheat: Price differentials, selected markets and States, per bushel, 1939-56 1/

Years	Portland price above (+) or below (-) support price No. 1 soft white	Kansas City price above (+) or below (-) support price No. 2 hard wheat	Average Washington and Oregon price above (+) or below (-)			California price above Washington and Oregon
			Idaho	Utah	Montana	
	Cents	Cents	Cents	Cents	Cents	Cents
1939........	+ 6	- 3	+ 5 to - 11			
1940........	+ 3	-15	+ 4 to + 6			
1941........	- 9	+ 2	+ 2 to + 9			
1942........	- 3	- 1	0 to + 4			
1943........	+11	+ 8	0 to + 1			
1944........	+ 5	+ 6	+ 4 to + 8			
1945........	+14	+ 7	+ 5 to + 9	- 3 to + 3	- 3 to + 1	+13 to + 17
1946........	+42	+45	+ 2 to + 4	- 9 to - 7	- 8 to -10	+26 to + 28
1947........	+52	+50	- 3 to + 1	+ 9 to + 5	-16 to -20	+17 to + 21
1948........	+ 1	- 4	+13 to + 21	+ 8 to +14	+ 8 to +14	+16 to + 22
1949........	+ 3	- 4	+13 to + 21	+15 to +23	+16 to +14	+ 1 to + 9
1950........	+ 2	+ 3	+21 to + 28	+13 to +17	+ 9 to +16	0 to + 7
1951........	+ 2	- 1	+13 to + 17			
1952........	- 5	-16	+16 to + 20			
1953........	-14	-22	+17 to + 22	+22 to +27	+15 to +20	+ 1 to + 4
1954........	-10	-16	+14 to + 19	+12 to +17	+ 2 to + 7	0 to + 5
1955........	- 8	-19	+15 to + 19			
1956........	+20	- 9				

1/ In 1944 and 1954 respectively Oregon produced 87 and 93 percent white wheat, Washington 70 and 77 percent, Idaho 56 and 50 percent, Utah 44 and 33 percent, Montana 0 and 0 percent and California 100 and 100 percent white wheat.

Table 39.--Wheat: Influence of changing price supports on competition for the Pacific Northwest and California markets, per bushel 1946 and 1956 1/

Source and cost item	To Portland		To San Francisco		To Los Angeles	
	1946	1956	1946	1956	1946	1956
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Pacific Northwest:						
Dayton, Wash.						
Cost of wheat	1.419	1.98	1.419	1.98	1.419	1.98
Rail rate	.1273	.1273	.2928	.2928	.3947	.3947
Total	1.5463	2.1073	1.7118	2.2728	1.8137	2.3747
Lind, Wash.:						
Cost of wheat	1.419	1.98	1.419	1.98	1.419	1.98
Rail rate	.1464	.1464	.2992	.2992	.4010	.4010
Total	1.5654	2.1264	1.7182	2.2792	1.8200	2.3810
Pendleton, Oreg.:						
Cost of wheat	1.451	1.99	1.451	1.99	1.451	1.99
Rail rate	.1210	.1210	.2864	.2864	.3883	.3883
Total	1.5720	2.1110	1.7374	2.2764	1.8393	2.3783
Potlatch, Idaho:						
Cost of wheat	1.366	1.80	1.366	1.80	1.366	1.80
Rail rate	.1545	.1545	.2966	.2966	.3955	.3955
Total	1.5205	1.9545	1.6626	2.0966	1.7615	2.1955
Southern Idaho:						
Boise:						
Cost of wheat	1.363	1.76	1.363	1.76	1.363	1.76
Rail rate	.2228	.2228	.3183	.3183	.3565	.3565
Total	1.5858	1.9828	1.6813	2.0783	1.7195	2.1165
Twin Falls:						
Cost of wheat	1.363	1.76	1.363	1.76	1.363	1.76
Rail rate	.2800	.2800	.2737	.2737	.3374	.3374
Total	1.6430	2.0400	1.6367	2.8337	1.7004	2.0974
Pacific Northwest, average	1.5510	2.0748	1.7075	2.2312	1.8086	2.3324
Southern Idaho, average	1.6144	2.0114	1.6590	2.0560	1.7100	2.1070
Advantage to Pacific Northwest millers	.0634	---	---	---	---	---
Advantage to South Idaho or California millers	---	.0631	.0485	.1752	.0986	.2354

1/ Assuming constant rail rates.

of years, he could have lost all of his California markets. The smaller the transportation cost, the greater the influence of the price support differentials (table 39).

The years 1946 and 1956 were unusual years in that the market prices were significantly higher than the support prices. This situation occurred in only 5 of the past 18 years. Four of these 5 years were during World War II and the other, 1956, was the result of a tremendous export of Pacific Northwest wheat and flour. Thus, the price support program was not effective or at least not as effective in these 5 years as in the other 13 years. During 1946 and 1947, the differential between Washington and Idaho prices almost disappeared, and in 1956 it decreased to less than half the price support differential.

In most years the price support program can normally be expected to be effective and an analysis of the price support differentials will reflect the area differences in the price of wheat. However, in order to check the strength of the influence of the cost of wheat to the miller, similar analyses are made of the season average prices received by farmers in the States of Washington and Idaho 17/ for the years 1946 and 1956 (table 40). It should be remembered that in 1946 prices were considerably above support due to a large export program and the differential between Washington and Idaho farm prices was 2 cents per bushel. In 1956 prices were somewhat above the support level and the differential was 9 cents.

A comparison of the results of the analyses contained in table 39 and 40 indicates:

1. That the greater the differential of Washington over south Idaho wheat prices or supports (even assuming comparable quality wheat), the greater the theoretical loss of all markets to Pacific Northwest millers. Even if the differentials are reduced to only 2 cents per bushel, the Pacific Northwest millers compete at a disadvantage in the California market, assuming these simplified rail rate charges are representative of the mode of transportation used and that transportation rates remained constant.

2. That the less the difference in distance and transportation cost, the greater will be the potential theoretical loss of market to the Pacific Northwest miller due to price or price support differentials, because of the smaller influence of transportation rates.

Brief Price Support Methodology

Even though the influence of each of these factors was analyzed separately, they are closely interwoven. It was for this reason that, in the study of the influence of the cost of wheat to the miller, transportation costs were recognized but held constant during the period. In the analysis of the influence of transportation rates, the cost of wheat was held constant.

17/ Wheat Supply and Distribution in the Pacific Northwest. Oreg. Wheat Commission and Wash. State Dept. Agr., Statis. Bul. No. 1, December 1956, 80 pp.

Table 40.--Influence of changing wheat prices received by farmers on competition for the Pacific Northwest and California markets, per bushel, 1946 and 1956

Source and cost item	To Portland		To San Francisco		To Los Angeles	
	1946	1956	1946	1956	1946	1956
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Washington:						
Cost of wheat	1.75	1.93	1.75	1.93	1.75	1.93
Rail rate 1/	.1368	.1368	.2963	.2963	.3978	.3978
Total	1.8868	2.0668	2.0463	2.2263	2.1478	2.3278
Idaho:						
Cost of wheat	1.73	1.84	1.73	1.84	1.73	1.84
Railrate 2/	.2514	.2514	.2960	.2960	.3470	.3470
Total	1.9814	2.0914	2.0260	2.1360	2.0770	2.1870
Advantage to Washington	.0946	.0246	---	---	---	---
Advantage to Idaho	---	---	.0203	.0903	.0708	.1408

1/ Average Lind and Dayton, Wash., assuming constant rail rates.
2/ Average Boise and Twin Falls, Idaho, assuming constant rail rates.

Freight rates and increases in them have an influence in establishing county price support rates. "County price support rates are calculated by subtracting from the appropriate market rate an annual amount equal to the sum of (1) average freight from shipping points within a county, (2) freight tax, and (3) country elevator in-and-out charges. These weights are weighted by historical wheat production (latest 5-year average of county production) to obtain the national average." 18/ From the above procedure the potential impact of transportation rate changes on changes in the county price support rates becomes readily apparent.

It should also be pointed out, however, that transportation rates are not considered in determining "the appropriate market rate" used in the above process. Once the national average price support level is established, the price support rate at Kansas City (the key terminal) is calculated ".....by adding to the national average support rate the weighted average freight from its producing area to Kansas City (tax included) and the Uniform Grain Storage Agreement in-and-out charges. The Kansas City rate is then adjusted to No. 1 Hard Red Winter by adding the normal 1-cent premium for No. 1 wheat. Price support rates for other terminals are calculated by applying their historical differential to the Kansas City rate." 18/

These differentials are determined in this way: "Yearly averages of cash prices as reported by the Market News Branch, Grain Division, AMS, for these markets are tabulated and both long-term (10-year) and shorter term (5-year and 3-year) averages are expressed as a differential to the Kansas City price. The differentials are then studied in connection with the factors which influence the cash prices such as production in the area, export demands, carryover, and domestic requirements." 18/

The differentials among terminal markets are summarized in table 41. This computation, baseduupon historical data, tends to retain the relationships of the 1930's because of the annual reconsideration of these data or data based upon these relationships. This may explain at least some of the apparent inflexibility of wheat prices in the various areas in terms of reacting to shifts in population, transportation rates, and types of wheat produced.

The primary purpose of the price support program is to maintain wheat prices to the farmer at some given level. This, of course, is to be done in such a way as to minimize the influence on related industries.

18/ Commodity Stabilization Service. Summary of Methods for Determining Price Support Rates for Wheat. U. S. Dept. Agr. 2-page mimeo. Jan. 21, 1958.

Table 41.--Wheat: Price support differentials between Portland and other terminal markets, per bushel, 1938-56

Year	Portland No. 1 white wheat ~~exceeds~~-- below			
	Kansas City No. 1 hard wheat	San Francisco No. 1 soft white	Chicago No. 1 hard wheat	Minneapolis dark northern spring wheat
	Cents	Cents	Cents	Cents
1938	6	4	10	14
1939	5	4	7	14
1940	5	4	8	14
1941	7	5	10	10
1942	9	6	11	11
1943	5	3	8	8
1944	5	10	9	7
1945	5	10	9	7
1946	5	10	9	7
1947	5	10	9	7
1948	5	10	10	7
1949	5	5	1/	7
1950	5	5	10	7
1951	5	5	10	7
1952	5	2	9	8
1953	5	2	9	8
1954	8	6	12	11
1955	10	8	10	13
1956	10	8	10	13

1/ Not available.

IMPLICATIONS OF THE ANALYSIS

The flour milling industry in the United States can be characterized as an industry producing a slightly increased volume in a rapidly decreasing number of plants with a much larger volume of operation per plant.

The flour milling industry in the Pacific Slope area has followed the national trends in about the same relative degree. However, when individual groups of States are considered, California's increases in rated capacity and production have approximately compensated for reductions in the Pacific Northwest, especially in the State of Washington. More rapid reductions in the number of plants in the Pacific Northwest were obscured by slower changes in California.

The national trend towards fewer and larger mills, with most casualties among small independent plants, has altered competitive relationships among the flour mills in the Pacific Northwest. Competition with other wheat-producing areas, however, has been influenced partially by forces which tend to increase the cost of locally produced wheat and flour. The most important of these forces are (1) relatively large exports of wheat, (2) price support levels, and

(3) the relatively much greater increase in the freight rates from the Pacific Northwest to the southern California market than from the other Pacific Slope States.

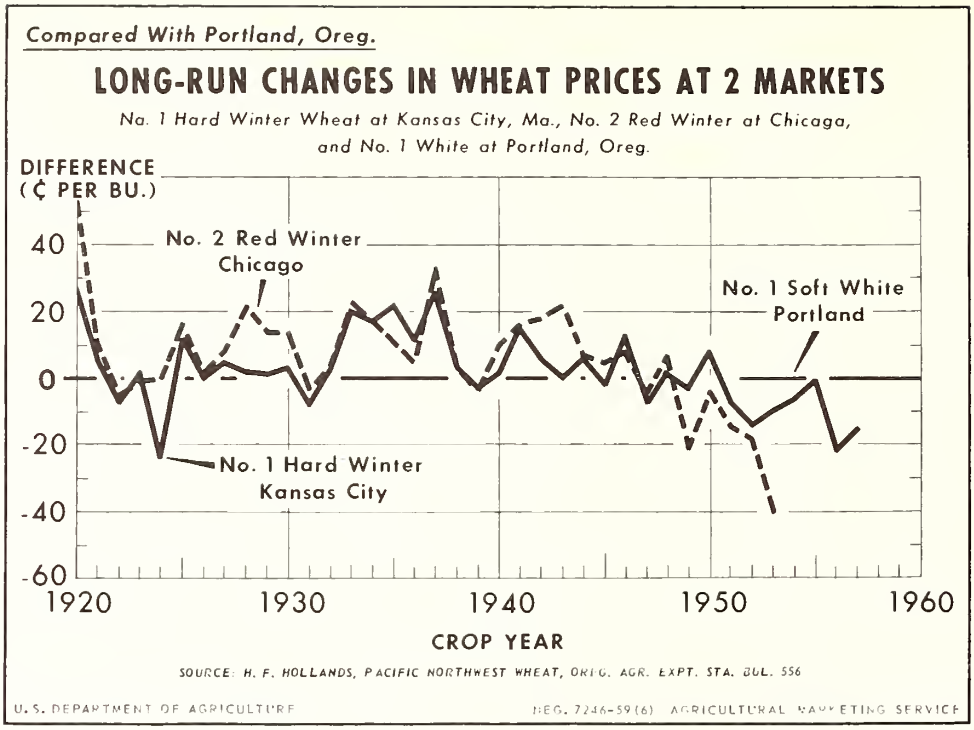
Other factors contributing to difficulties encountered by flour millers in the Pacific Northwest are (1) a relatively smaller demand for flour byproducts, (2) a decreasing domestic demand for soft white wheat, and (3) the relatively greater growth in population in California.

Exports of flour from the Pacific Northwest appear to have alleviated competitive pressures on some Pacific Northwest mills. However, this benefit is limited to those mills that produce a significant proportion of their flour for export. Such mills are confronted with the fact that flour exports fluctuate considerably from year to year, and flour exports from the Pacific Northwest, even though still highly favorable, have tended downward recently.

One of the primary forces which has influenced the competitive position of the flour millers in the Pacific Northwest during 1947-56 has been the relative increase in the price of locally produced white wheat. Most white wheats are rated good to excellent for pastry, cake and cookie flour; good to fair for cracker flour; and poor to fair for baker, family and sweet dough flour. However, soft wheats have been used as part of the formula even for baker, family and sweet dough flours. Thus the cost of wheat to the Pacific Northwest millers also has increased if the relatively high prices for white wheat has caused a reduction in the use of this wheat in any flour in favor of wheat of a normally higher price and quality. This relative increase in price is indicated in figure 2 where the price of No. 1 white wheat (Portland) is compared with No. 1 hard winter (Kansas City) and No. 2 red winter (Chicago), two representative markets for major types of wheat. Similar trends in prices are also shown in figure 3 where the soft white (Portland) price as compared with the prices of No. 2 soft red in five other cities.

These relative shifts in the cost of supplies of wheat appear to be caused almost entirely by the relatively large increase in the export of wheat from the Pacific Northwest. These findings can be summarized briefly by noting that exports of wheat and flour, primarily wheat, from the Pacific Northwest have increased from an average of 22 percent (low of 6 and a high of 50) of the annual production during the 1938-44 period to an average of 66 percent (low of 47 and a high of 215) of the annual production during the 1945-56 period. Comparable data for the remainder of the United States are an average of 7 percent (low of 1 and a high of 14) during the 1938-44 period and an average of 30 percent (low of 5 and a high of 40) during the 1945-56 period. The same general magnitudes are noted when total exports of white wheat from the United States are compared with the total exports of other wheats (table 42).

Table 42 also shows the direct relationship between the changing volume of exports for white wheat relative to hard red winter wheat and the changing price differentials for these wheats, especially if the years reflecting a wartime influence are excluded. This relationship becomes even more pronounced when the ratio of exports to stocks is substituted for the volume of exports.



Compared With Portland, Oreg.

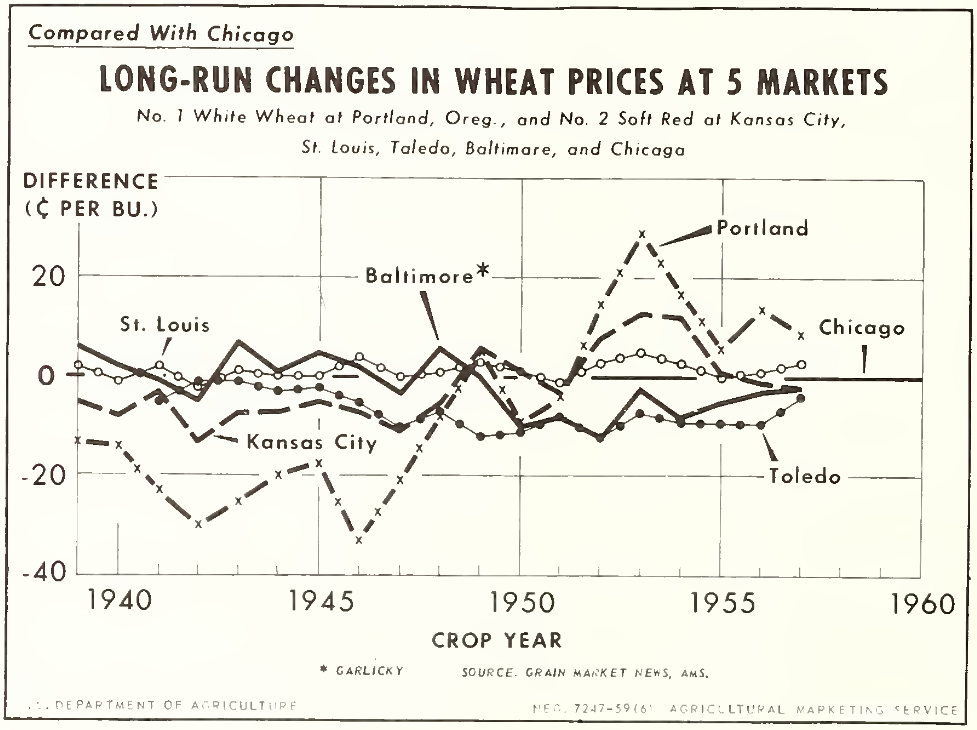
LONG-RUN CHANGES IN WHEAT PRICES AT 2 MARKETS

No. 1 Hard Winter Wheat at Kansas City, Mo., No. 2 Red Winter at Chicago, and No. 1 White at Portland, Oreg.

SOURCE: H. F. HOLLANDS, PACIFIC NORTHWEST WHEAT, OREG. AGR. EXPT. STA. BUL. 556

U.S. DEPARTMENT OF AGRICULTURE NEG. 7246-59 (6) AGRICULTURAL MARKETING SERVICE

Figure 2



Compared With Chicago

LONG-RUN CHANGES IN WHEAT PRICES AT 5 MARKETS

No. 1 White Wheat at Portland, Oreg., and No. 2 Soft Red at Kansas City, St. Louis, Toledo, Baltimore, and Chicago

* GARLICKY

SOURCE. GRAIN MARKET NEWS, AMS.

U.S. DEPARTMENT OF AGRICULTURE NEG. 7247-59 (6) AGRICULTURAL MARKETING SERVICE

Figure 3

Table 42.--Differentials in exports and prices for hard red winter and soft white winter wheat, 1934-57

Year	U. S. wheat exports		Excess of hard red exports over white exports	Change in excess from preceding year	Change in Kansas City price differential over Portland from preceding year 1/
	Hard red winter	White			
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Cents per bushel
1934....:	3	11	- 8	--	--
1935....:	2	5	- 3	+ 5	+ 5
1936....:	3	9	- 6	- 3	-10
1937....:	70	26	+ 44	+ 50	+14
1938....:	69	30	+ 39	- 5	-22
1939....:	22	19	+ 3	- 36	- 7
1940....:	6	24	- 18	- 21	+ 5
1941....:	20	7	+ 13	+ 31	+13
1942....:	20	9	+ 11	- 2	- 9
1943....:	21	15	+ 6	- 5	- 6
1944....:	104	5	+ 99	+ 93	+ 6
1945....:	237	36	+201	+102	- 8
1946....:	271	56	+215	+ 14	+15
1947....:	338	42	+296	+ 81	-20
1948....:	352	50	+302	+ 6	+ 9
1949....:	180	62	+118	-184	- 5
1950....:	199	81	+118	0	+11
1951....:	251	103	+148	+ 30	-15
1952....:	184	77	+107	- 41	- 7
1953....:	78	75	+ 3	-104	+ 4
1954....:	128	64	+ 64	+ 61	+ 4
1955....:	164	87	+ 77	+ 7	+ 5
1956....:	254	193	+ 61	- 16	-21
1957....:	226	118	+108	+ 47	+ 7

1/ Kansas City price No. 1 hard winter and Portland price of soft white winter.

None of the other factors such as relative changes in the domestic consumption, stocks of wheat, quality of the wheat produced, transportation rates, and the levels of price support could have caused the relative price shifts shown in figures 2 and 3, and table 42. In fact, the relative changes in each of these factors appear to indicate a tendency to reduce the Portland price of white wheat relative to the Kansas City and Chicago prices of hard winter wheat. During the period 1947-56:

1. The domestic disappearance of soft white wheat has decreased both in actual amount and relative to the domestic disappearance of hard red winter wheat.

2. The domestic disappearance of soft wheat has also decreased relative to the domestic disappearance of hard red winter wheat when each is expressed as a percentage of its production.

3. Stocks of soft white wheat have increased relatively more rapidly than have stocks of hard red spring wheat.

4. Pacific Northwest wheat producers have shown a tendency to increase the production of the higher yielding, lower quality white wheats.

5. The large increases in transportation rates which have occurred since 1946 tend to cause relatively lower prices for wheat shipped to the distant or marginal markets. It is expected that these conditions can be applied to the Pacific Northwest in view of the distance to the eastern markets and the important market in southern California.

Changes in the terminal market price support differentials do not appear to have been a direct cause of any of this relative increase in the Portland price of soft white wheat (table 42). Until recently these terminal price support differentials have remained relatively stable and during the entire period they have attempted to reflect a greater premium for the Kansas City price over the Portland price than has been shown by the actual market prices. This implies that even if the price support program had increased the differentials in favor of Kansas City (as it did in 1954-56), the current supply and demand conditions still would have increased the Portland price relative to the Kansas City price.

Thus, considering only the interterminal price differences, the great increases in foreign export sales of white wheat relative to other wheats appear to have been the primary cause of a relative increase in the cost of white wheat to flour millers located in the Pacific Northwest. Table 43 indicates that, given the existing supply and demand conditions, price support differentials have not been a direct cause. However, it is possible that relatively high supports have tended to increase production and supplies of white wheat relative to other types and thus induced these large exports. To the extent that all of these exports of white wheat are in response to a naturally occurring sustained demand for this particular type of wheat, the impact of this export trade on the price of wheat to the millers located in the Pacific Northwest is merely incidental to the interaction of the supply and demand factors. However, some of this apparent export demand may have been conditioned by the large production and stocks of white wheat relative to other types of wheat to the extent that this is true, this type of export probably should not be reflected in the historical demand structure in setting price support differentials for Portland relative to Kansas City. To do so would merely magnify the problem more and more as time goes on. Obviously, a study of the factors influencing the changing competitive conditions affecting flour mills located in the West could not include a complete analysis of the background forces operating in the export market. It appears, however, that the impact of these large exports of white wheat may be very great, since theoretically, by increasing the relative prices for white wheat, it may also have caused some of the decrease in the quantity used in the domestic markets.

Another factor which intensifies the problem of cost of wheat supplies for flour mills in the Pacific Northwest is the Pacific Northwest vs. south Idaho

Table 43.--Wheat: Terminal market loan rates and average prices in Portland, Ore., and Kansas City, Mo., 1934-56

Crop year	No. 1 soft white, Portland, Oreg.			No. 1 hard winter, Kansas City, Mo.			Kansas City price as percent of: Portland	Loan differential, Kansas City over Portland	Price differential, Kansas City over Portland
	Loan rate	Average price	Price as percentage of loan	Loan rate	Average price	Price as percentage of loan			
	Dollars	Dollars	Percent	Dollars	Dollars	Percent	Percent	Dollars	Dollars
1934.....		0.81			0.98		121		0.17
1935.....		.81			1.03		127		.22
1936.....		1.07			1.19		111		.12
1937.....		.87			1.13		130		.26
1938.....	.67	.66	99	0.72	.70	97	106	0.05	.04
1939.....	.73	.80	110	.77	.77	96	96	.04	- .03
1940.....	.73	.76	104	.79	.78	104	103	.06	.02
1941.....	1.05	.96	91	1.12	1.11	100	116	.07	.15
1942.....	1.21	1.18	98	1.30	1.24	97	105	.09	.06
1943.....	1.34	1.45	108	1.37	1.45	106	100	.03	0
1944.....	1.46	1.51	103	1.50	1.57	104	104	.04	.06
1945.....	1.49	1.63	109	1.53	1.61	105	99	.04	- .02
1946.....	1.60	2.02	126	1.65	2.15	127	106	.05	.13
1947.....	1.98	2.50	126	2.03	2.43	124	97	.05	- .07
1948.....	2.19	2.20	100	2.24	2.22	98	101	.05	- .02
1949.....	2.16	2.19	101	2.20	2.16	98	99	.04	- .03
1950.....	2.21	2.23	101	2.26	2.32	101	104	.05	.08
1951.....	2.40	2.42	101	2.45	2.37	99	98	.05	- .07
1952.....	2.44	2.39	98	2.49	2.27	93	95	.05	- .14
1953.....	2.45	2.31	94	2.50	2.21	91	96	.05	- .10
1954.....	2.46	2.36	96	2.54	2.30	93	97	.08	- .06
1955.....	2.28	2.19	96	2.38	2.18	92	100	.10	- .01
1956.....	2.21	2.40	109	2.31	2.19	95	91	.10	- .22

Table 44.--Analysis of wheat prices received by farmers and support prices in Washington and Idaho 1940-56 1/

Year	Washington minus Idaho		Percentage increase in rail rates from preceding year	Rail rates per bushel to Los Angeles from		Percentage of annual production represented by white wheat		Exports from the Pacific Northwest expressed as a percentage of the area's production
	Prices received by farmers	Support price		Pacific North-west	South Idaho	Washington	Idaho	
	Dollars	Dollars	Percent	Dollars	Dollars	Percent	Percent	Percent
1940.......	0.04	0.07				2/ 62	2/ 54	32
1941.......	.02	.07						8
1942.......	.00	.07						8
1943.......	.00							7
1944.......	.04					70	56	6
1945.......	.05							47
1946.......	.02	.05	+ 3	0.3949	0.3470			48
1947.......	.01	.07	- 3 + 25					51
1948.......	.13	.12	+20					64
1949.......	.13		+ 8			65	52	72
1950.......	.13		0					82
1951.......	.16		+ 6					109
1952.......	.17	.19	- 6 + 12					72
1953.......	.14		0			78	50	50
1954.......	.15		0					51
1955.......	.14		0					85
1956.......	.15	.20	+10	.7092	.5516			215

1/ Available years.
2/ 1939.

price differential. The data indicate that Pacific Northwest wheat has been selling at an increasing premium over south Idaho wheat (table 44). The primary reason for this increasing premium appears to be the price support differentials. At least, this differential decreased in 1946 and 1956 when the local price supports were relatively ineffective.

Table 44 also shows that these differentials increased during a period when (1) the relative quality of the wheat produced in the Pacific Northwest was decreasing relative to that produced in south Idaho, and (2) the rail rates increased from both areas to the California market, indicating that a relative decrease in Pacific Northwest wheat prices should have occurred. Again, only the export shipments of Pacific Northwest wheat and the doubling of wheat prices could have explained the doubling of the price differential. Quality of the wheat produced and the relative increase in rail rates to the domestic markets, the most direct considerations, do appear to indicate that the cost of white wheat to the Pacific Northwest millers is higher than it would be expected to be from an analysis of south Idaho price and quality data.

Another very important factor influencing the competitive position of the Pacific Northwest miller is the much greater increase in railroad rates for his shipments to the southern California market than to that market from other Pacific Slope States. For example, table 43 shows that while specific origins in the Pacific Northwest paid about 10 cents more per bushel of wheat or flour shipped to southern California markets in 1947 than did specific origins in southern Idaho, this deficit increased to 20 cents in 1957.

Relatively lower returns from the flour mill byproducts in the Pacific Northwest as contrasted to California also make Pacific Northwest millers compete at a disadvantage in the California market.

To the impact of the national trends, the increasing supply cost, the relative rail rate increases and the relatively lower demand for flour mill byproducts must be added the lower disappearance of white wheat and the slower growth of population in the Pacific Northwest as compared to California. These factors will become even more important in the future if flour and wheat exports achieve more normal levels. Current milling costs do not appear to offer the Pacific Northwest millers either an advantage or a disadvantage. However, technological change in marketing, such as the growth in sales of flour items in consumer-size packages, which were not analyzed in this study, may be tending to offer some advantages to mills trying to follow popular demand closely. These "demand-oriented" segments of the flour industry in California probably will continue to rely largely on supplies from Utah and southern Idaho, where they have an advantage in buying.